DOCUMENT RESUME

ED 324 171 RC 017 771

AUTHOR	Huberman, Robert G.; Huberman, Karen Pale Moon
TITLE	Our Only Homeland: An Ecological Look at the Land of the Gros Ventre and Assiniboine.
INSTITUTION	Hays/Lodge Pole Public Schools, Hays, MT.
SPONS AGENCY	Department of Health, Education, and Welfare, Washington, D.C.
PUB DATE	80
NOTE	66p.; Photographs will not reproduce clearly.
PUB TYPE	Guides - Classroom Use - Materials (For Learner) (051)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	American Indian Culture; *American Indian Education; American Indian History; *American Indian Reservations; Biological Sciences; Energy Education; *Environmental Education; Forestry; Mining; *Natural Resources; Reservation American Indians; Secondary Education; Water Resources
IDENTIFIERS	*Environmental Protection; *Fort Belknap Reservation MT

ABSTRACT

This combined textbook and workbook examines the natural environment of the Hays/Lodgepole school district, and includes some general information about the Fort Belknap Indian Reservation. Chapter 1 describes the environment of the Little Rockies, the tribal forest management, tree diseases and infestations, logging, the effects of arson and accidental fires, and geology. Chapter 2 discusses the plains area of the reservation. Topics include rangelands management, wildlife, saline seep, and pest and predator control. Chapter 3 discusses water resources and water's relationship with the surrounding environment. Chapter 4 examines wilderness areas and Fort Belknap, including the importance of wilderness preservation and its effect on the local economy. Chapter 5, "Thinking about Our Land," encourages the reader to take an environmentalist view of the reservation and its resources. This chapter specifically examines hunting and nonrenewable resource development (coal, gas, and minerals). A brief conclusion calls upon the native people of Fort Belknap to protect their reservation homeland. The document also includes numerous pictures and maps, a glossary of terms, a list of research sources and agencies, some suggested school projects, and a bibliography of 43 entries. (TES)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

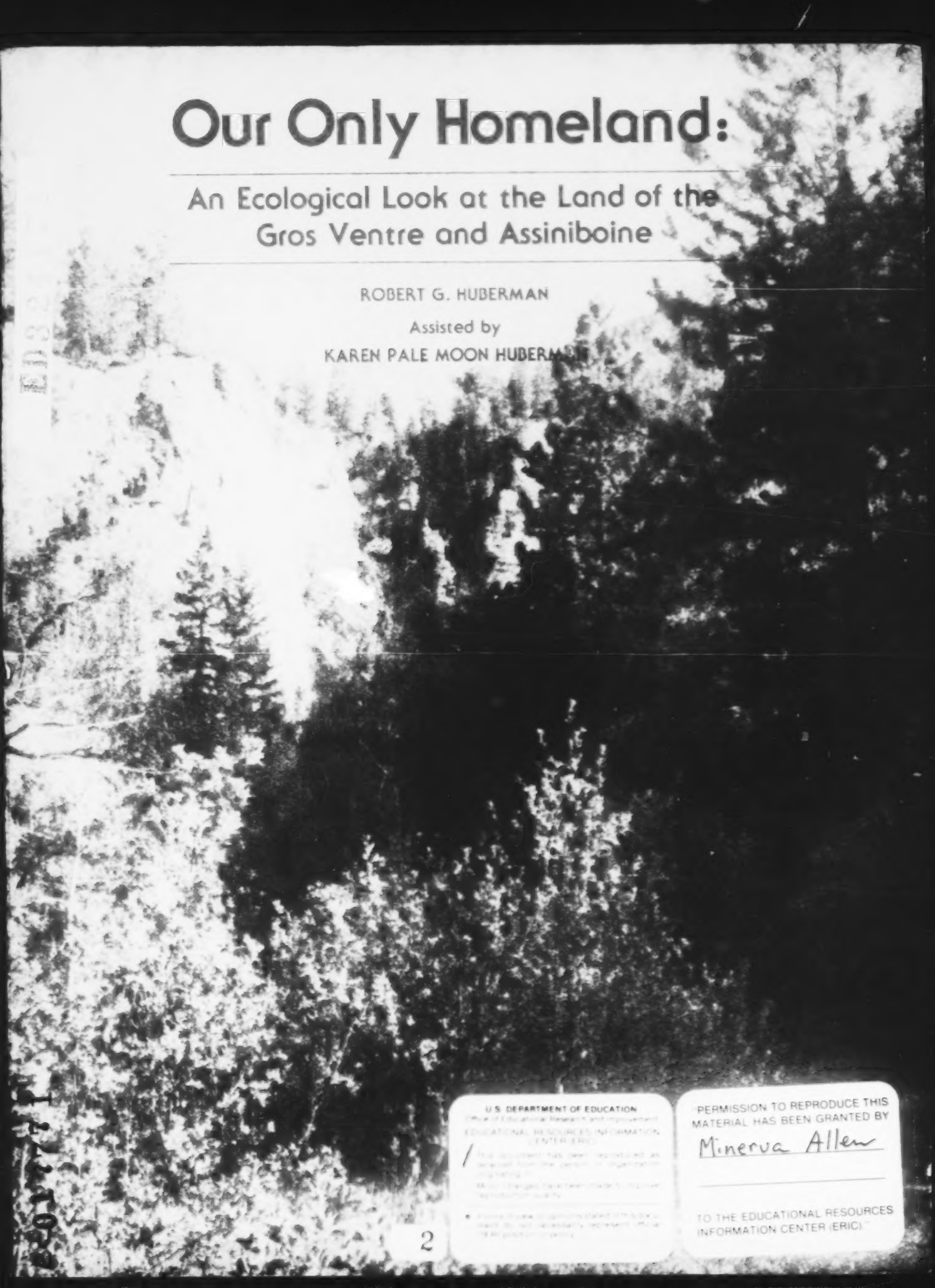
Our Only Homeland:

An Ecological Look at the Land of the Gros Ventre and Assiniboine

ROBERT G. HUBERMAN

Assisted by

KAREN PALE MOON HUBERMAN



U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Minerva Allen

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

OUR ONLY HOMELAND:

An Ecological Look at the Land of the Gros Ventre and Assiniboine

Robert G. Huberman
Assisted by
Karen Pale Moon Huberman

Illustrated by Lester Doney

Hays/Lodgepole Public Schools

CREDITS

RESEARCH ASSISTANCE
EDITING
DESIGN AND LAYOUT: Karen Pale Moon Huberman

PHOTOGRAPHY: Dr. Mark Koday
Karen Pale Moon Huberman
Robert G. Huberman

COMMUNITY CONTRIBUTORS: Vernie Bell
John Crasco
Dora Helgeson
Jeanette Warrior
Beeneferd Wing

STUDENT CONTRIBUTORS: Teresa Brockie
Laurie Flansburg
Darwin LongFox
Carrie Longknife

ACKNOWLEDGMENTS

Our research was aided by the expertise of Dr. Don Collins, Dept. of Biology, Montana State University; Ed Eschler, Project Learning Tree Program, Office of Public Instruction, Helena, Montana; Delmar "Poncho" Bigby and John Capture, Fort Belknap Tribal Planning Office; Stewart Roe, Jerry Trada, and Ron Wilkerson, Fort Belknap BIA Resources Department; Larry Petersen, and Lois Randall, U.S. Fish and Wildlife Service, Kalispell, Montana.

Thanks go to Joni Keating, grant writer and environmental educator.

Special thanks to Larry W. LaCounte, Superintendent Hays/Lodgepole Public Schools, whose foresight into the educational needs of our communities has enabled us to undertake this project.

This project is part of a community education program, funded under the Environmental Education Act, from the Office of Environmental Education, Department of Health, Education, and Welfare.

Copyright 1980 Hays/Lodgepole Public Schools

Dedicated to
Grace Huberman

TABLE OF CONTENTS

Teacher's Preface 5

Introduction 7

Chapter 1: The Little Rockies 8
- A. Water and the Little Rockies
- B. Forest management on our tribal timber reserve
- C. Logging and timber production
- D. Firewood
- E. Insect infestations and tree disease
- F. Logging and the mountain environment
- G. Fire ecology and plant succession
- H. Arson and accidental fires
- I. Fire and wildlife
- J. Geology

Chapter 2: The Plains 18
- A. Rangeland
- B. Rangeland management
- C. Wildlife on the range
- D. Saline seep
- E. Predator and pest control

Chapter 3: Our Water: More Precious Than Gold 26
- A. Beavers: natural water engineers
- B. Fish habitat
- C. Gold mining vs. our watershed
- D. The Winters doctrine

Chapter 4: Wilderness and Fort Belknap 33
- A. Wilderness characteristics
- B. Wilderness and the Fort Belknap economy
- C. Wilderness preservation

Chapter 5: Thinking About Our Land. 41
- A. Fort Belknap's contribution to world problems
- B. Hunting
- C. Non-renewable resource development

Conclusion 52

Glossary 54

Appendix: Teacher's reference materials and sources 56
- A. Organizations and government agencies
- B. Local area maps
- C. Hays/Lodgepole library book list
- D. Suggested study projects by high school subject

Bibliography 62

Our Only Homeland: An Ecological Look at the Land of the Gros Ventre and Assiniboine is a textbook/workbook designed to focus on the specific physical environment of the Hays/Lodgepole School district, including some information of the Fort Belknap Reservation in general. While developing this book, we intentionally avoided writing a general discourse of the principles of ecology. There are other books which can be used to cover these concepts, and rewriting an ecology text was not within the scope of this project. We recommend Ecology, by Alexander and Fichter, Golden Press, and Understanding the Game of the Environment, by David R. Houston, Bulletin #426, September 1979, U.S. Department of Agriculture, Forest Service. There are also several fine supplementary activity guides available to teachers, which will bring their students outside into "nature's classroom". The Hays/Lodgepole Schools have elected to adopt the Project Learning Tree, activities guides; one for grades K-6, the other for grades 7-12. While we offered some specific questions and assignments aimed at our local area, we intended to leave the workbook-activity book to other sources. In order to properly acquaint the teacher with the different aspects of environmental sutdies, we have chosen Living in the Environment, by G. Tyler Miller as a teacher's Handbook and all around reference. Miller's text is a superb treatment of the many inter-related environmental topics, and the text has been written so that any college-level reader can become comfortable with the materials. By combining a simple student-oriented "science of ecology" book with *Our Only Homeland*, students will be able to integrate local examples of ecological principles with the broader concepts of the world's environment.

The orientation of this book includes the idea that the Fort Belknap Indian Reservation is a sovereign nation. When the teacher steps into a job on the reservation, that person is actually working in a kind of separate little nation within a big nation. Legally this reservation has the power to create its own civil and criminal codes, tax structure, and local government. State authorities have no control over the reservation. For these reasons, when we refer to "our mountains" or "our waters", we are speaking more literally than figuratively.

The materials in this book have a wide range of application - from natural science to social studies. A gamut of school subjects should be integrated into a wholistic environmental education program. We therefore encourage all teachers to read through *Our Only Homeland* to see where different ideas can be included in his or her particular subject. Finally, *Our Only Homeland* should serve as a kind of new-teacher orientation to the local area which that instructor now calls home.

We freely acknowledge that this book has a definite environmentalist bias. The project was, after all, funded by the U.S. Department of Health Education and Welfare to encourage environmental awareness in our local community. By stressing the importance of environmental protection, we automatically take a definite stance on certain controversial issues. Anyone who wants to hear "the other side" of these topics should read magazines, watch TV, or listen to the radio. Big business and a host of other special interest groups spend billions of dollars and thousands of man/hours giving our public and our lawmakers

their carefully constructed point of view. The book also leans towards a traditional Indian outlook, which often conflicts with the beliefs of the dominant western culture. If either of these biases trouble the reader, we offer the wisdom of Dr. Vince Pennisi, who said, *"Don't move to the desert and then complain about how dry it is."*

Rob Huberman
Karen Pale Moon Huberman

May, 1980
Hays, Montana

NOTE: The questions and discussion topics at the end of the chapters could be used either for written assignments, or for class discussion. We suggest that the teachers allow one day, on a regular basis, for class participation with this text, and Project Learning Tree. It has been the experience of the teaching staff that class assignments are more effective than homework assignments.

It is a cold fact that millions of people on our planet barely cling to life, while millions more starve to death. Inhuman living conditions prevail in many parts of the world, bringing malnutrition, disease, and suffering. In our prosperous country, many Americans live crowded into urban centers where the air is unfit to breathe, the rivers are putred cesspools, deadly chemicals pollute the land, and constant, grating noise insults the ears. Instead of riding horses through open meadows, the children must play in dirty alleys or parking lots. The new cars, big homes, and hundreds of gadgets and appliances of the "comfortable" American family could not replace the feelings that we "poor" Indians get when we ride a horse up to a high lookout, and gaze out over a hundred miles of plains, river breaks and distant mountains. There is no substitute in the artificial world of today for the kind of quality we enjoy just by living here. No amount of money, material possessions or technocratic double talk about "progress for the Indians" could bring this back if we lose it.

We should not delude ourselves into thinking that the people of the cities and suburbs of America asked for the conditions they have, and therefore deserve no better. For them, the problems are great, and the answers are truly hard to find. Nor can we sit back and proclaim that these problems couldn't affect us here. Wrong. Everything effects everything else. The fact that we have not yet overpopulated, exploited, and otherwise polluted our reservation is due chiefly to the fact that we have made a permanent home of this land for only a short 100 years, and there were never very many of us. Boston has been full of people for three hundred and fifty years. The problems facing Boston simply haven't caught up with us here . . . so far.

Demands will be made of our land by outside forces. We must be ready to deal with a "world gone mad" out there. If we are not armed with knowledge and understanding, they will roll right over us just like they did 100 years ago. Last time it was the cavalry, the railroads, the "49'ers", and the buffalo guns. This time it will be the coal strip mines, dams, uranium mines, big oil, and agribusiness. We have here at Fort Belknap a fresh, open land. It has been used to our benefit, but not yet ruined. How we manage our towns, our natural resources, and our lives will decide whether we can hold on to our only homeland, or quietly lose our place on the high plains like our brothers, the buffalo and the wolf.

PHOTO BY MARK KODAY

To the people of Fort Belknap, the Little Rockies are always a welcome and beautiful sight. Rising abruptly from the 3,000 foot level of the plains, the ridges of these mountains gain an elevation of over 5,000 feet in a few miles. The Gros Ventres called them "The Island Mountains", since they lay isolated like an island in an ocean of plains.

Though it is not a large range by Montana standards, the Little Rockies cover about 100 square miles of land! The mountain streams run through deep cut limestone canyons, and the ridges are marked by sheer rock cliffs. Some of the rock outcroppings resemble fortress walls and castles. Others form window arches, natural bridges and caves. Coniferous forests cover the slopes, but these evergreens give way to meadows and numerous stands of aspen, birch, and other deciduous trees. Hundreds of different kinds of birds, fish, insects, and animals make their home in these mountains.

Water and the Little Rockies

Why are there forests up in the Little Rockies, but none on the nearby plains? The main reason is the fact that there is enough water present in the mountains for the trees to grow. Trees need an area where water is present in relatively large amounts, and where it is available during most of the year. But Fort Belknap exists in an arid region of North America, where the average yearly precipitation is only 12 - 13 inches. Most of our annual precipitation here in Montana, east of the divide, takes the form of snow. Ecologists describe this type of area as a *steppe*, or temperate grassland environment.

Forested mountains actually collect water from the atmosphere, and hold this water in the form of snow. This happens when the winds bring in clouds, usually from the west. When the air reaches the mountains it moves up the slopes, several thousand feet from the ground. This air cools because the temperature of our atmosphere becomes lower as air moves higher, away from the earth's surface. Since cold air cannot hold as much moisture, the water

precipitates out in the form of rain or snow. This explains why, on a cloudy, drizzly day in late autumn, the mountains will receive snow when there is no snow on the plains and foothills. When the sun comes out, the snow shines brightly on the ridges. There is always a horizontal line where the air was cold enough to freeze the water falling from the clouds. From that altitude up to the ridgetops, precipitation took the form of snow.

In some higher, mountainous areas of the state, there is a great difference in elevation between the mountains and the plains. The annual snowfall is much greater than down on the dry praries. But our Little Rockies are not so much higher than the plains. In a year's time, there is only a little more precipitation in the mountains than on the plains or down in the Milk River valley. It is the forest trees that hold so much more of the moisture than the plains grasses. The trees grow in dense stands, since it usually takes a nearby tree to drop seeds and begin the growth of a new tree. The forest forms a canopy over the earth, making it cool in the summer, and cold in the winter. These giant areas of shade and windbreak allow snow to build up month after month, without melting. So there is moisture in the form of snow for about seven to eight months out of the year. In mid-October, the snow usually stays on the cool slopes once it has fallen, and in most areas of the Little Rockies, it does not completely melt until May.

The amount of snow that accumulates in a given winter season is called *snowpack*. Snowpack is very important, since it helps to determine how much water will be available each summer for runoff into the streams which drain the mountains. The snow melt and runoff from spring rains provide water for fish and other aquatic life, for birds and animals to drink, for farm and ranch irrigation and for stock water which is stored in reservoirs across the plains. Precipitation can also affect the water level of springs and wells to some degree. In this way the Little Rockies serve as Fort Belknap's watershed.

It is important to understand that the condition of the forest and forest soil affects the quality of the water flowing out of the mountains. Destruction of the forest by fire, improper logging practices, or mining activities can ruin the quality of the water, degrade the aquatic wildlife community, or affect our health. We must manage the Little Rocky Mountains in a way that will not upset the delicate balance of trees, soil, and water.

Forest management on our tribal timber reserve

The areas of the reservation that support large numbers of trees are considered to be part of Fort Belknap's timber reserve. The BIA Forestry department oversees the forest, and by doing so, it serves both the natural community and our human community. It is the forester's job to try to protect the forests from fire or other disasters, as well as to manage certain areas for timber harvesting and future timber production.

Forestry management is a "trust" responsibility of the Bureau of Indian Affairs. That is, the government foresters must act in the tribe's best interests, while maintaining a healthy forest community. Under this responsibility, the BIA

cannot allow forest practices or abuses that will be harmful to the forest in the long run. Since our people have traditionally revered and protected the forest of the Little Rockies, the tribal government tries to support any efforts to keep the mountains in a healthy, natural state, while using some of its resources for the benefit of our people.

The forest is used in many ways, so management must allow each activity to coexist without interfering with the others. This is known as *multiple use management*.

MULTIPLE USE FOREST MANAGEMENT

Logging is permitted in most areas that are accessible by road or ski trail. Certain areas, such as lower Mission Canyon and King Spring are managed as recreation areas, and tree cutting is not allowed.

Presently, there are no officially designated areas for backcountry uses such as hiking, horse riding, etc. Since there are a number of places where roads are either overgrown, or do no exist, these areas are naturally used by those of us who seek solitude and wilderness.

Logging and timber production

The BIA Forestry department is mainly concerned with timber production and harvesting. All commercial quality timber is sold to individual tribal members, and the income goes to the tribe as a whole. The sales are made through the BIA, but they in turn give the money to the tribal government. Most of the timber sales involve *salvage wood* - overgrown or over-mature stands, or trees infested by insects. Removal of these trees improves the overall quality of the forest, and allows for new, healthy growth of trees. Tribal members buy permits for fence posts and poles, house logs, or for saw lumber. Prices are set so that our people can afford to buy what they need for personal or family use. Permits are written for sales up to $2,500 worth of trees, at 70¢ per tree. For larger amounts of wood, a commercial license is required from the tribe.

There is currently one small sawmill operation owned by a tribal member. This is located above Mission Canyon, near the reservation boundry. The method of harvest being used there is known as *clear cutting*, that is, removal of all trees in a block area. In most cases, however, the approved cutting method is *selective cutting* - the removal of some mature trees from a stand. This method serves to thin out the stand, while allowing younger trees and saplings to grow.

PHOTO BY KAREN HUBERMAN

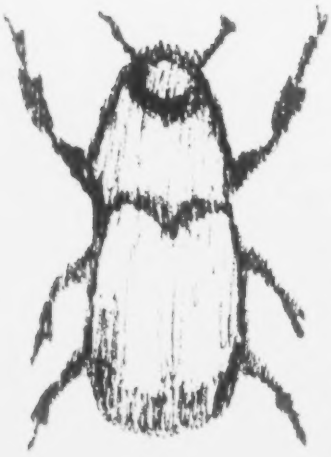
Overall, there are no more trees removed than the forest can replace by re-growth or seeding. This maintains a constant number of trees, keeping the forest community in balance. This practice is called *sustained yield*, since the forest can "keep up" with the number of trees that are removed over the years.

Firewood

Dead wood has been used for heating our lodges and homes since the days of the tipi. Today our people use the timber reserve as a place to gather firewood. Chain saws and pickup trucks make easy work of gathering the deadfall, or standing dead trees. Live trees are not supposed to be cut for firewood. Permits for firewood are free. Removal of dead wood can help to prevent serious forest fires, since deadfall serves as fuel for the fires. (Green trees do not burn as easily.) We find it easier to move through a timbered area that has been cleared of some of its deadfall. But by removing this dry wood, we do interfere somewhat with nature's cycle of decomposition, and release of nutrients back into the soil. This is not a problem for us in the Little Rockies, as there is enough decomposition of plant materials to keep the soil healthy.

As non-renewable energy sources become scarce, they become more expensive for us to use. As the cost of electric or propane heat rises, our people will most likely utilize wood as a source of home heating fuel. Our foresters estimate that there will be enough firewood available, even as the demand rises. But we must use our wood efficiently and wisely.

Insect infestations and tree disease



The Mountain Pine Beetle is a natural enemy of the pine tree which has lived in the coniferous biome for thousands of years. This small black beetle measures only about 1/8 inch long, but it can kill tall, old trees. The pine trees have a tough outer layer of bark, but the innermost layer, the cambium, is a delicate part of the tree's vascular system. The pine beetle burrows into this inner layer to lay it's eggs. When the young hatch, they eat their way across the tree's "blood vessels", and eventually cut off its flow of nutrients from the roots to the top. The beetle leaves its mark in the form of little pitch tubes - tree sap mixed with sawdust. Inner wood becomes waved with blue coloring, and the core of the tree often rots while the tree is standing.

This insect normally does the most damage among the mature trees which are not as healthy as the younger ones. The beetle kills the old and infirm in much the same way as the coyote kills the weaker members of the deer herd. But it can also attack younger trees. From nature's point of view, the pine beetle is neither good nor bad. But where trees are valued for their use as timber, the beetle is considered to be a problem. There are some stands within the Little Rockies which harbor the Mountain Pine Beetle, but at this time, the beetle is not a serious threat to our timber.

A disease known as *gall* also infects the forest, forming dark round knots on stems and limbs. Other insects and diseases exist in the forest, but this is the normal pattern in all woodlands. As long as they do not get out of balance, they do not cause a real change in the eco-system.

Logging and the mountain environment

Timber harvesting operations all cause some degree of environmental damage. Most logging outfits use small bulldozers to skid logs, cut access roads, and clear unwanted brush and trees. In other parts of Montana, unsound logging practices have resulted in huge clear cut areas of timber, often on steep hillsides where the soil was then washed away. There was often little regard for the appearance, or aesthetic beauty of a forest area, and many people have been horrified by these barren, spoiled mountainsides. Stream bottoms were often bulldozed, or roads were cut across the creeks, causing erosion, siltation, and destruction of the stream's living communities. Trees were cut right down to the stream edge, leaving no protection for the soil on the hillsides. The soil erosion ruined the creeks and caused damage to the waters farther downstream as well.

But foresters learned lessons from these bad examples, and the logging that is allowed in our mountains is more carefully supervised. More careful practices, such as building culverts or bridges where roads cross streams, or leaving ground cover up-slope from the sides of a stream bottom, can help to keep the watershed intact. Cutting is not allowed in highly visible areas where the

public uses the forest for recreation. Small clear cut areas, with buffer zones of trees are not as ugly as the huge clear cuts, and re-seeding is somewhat easier. Logging with conservation in mind can protect the forest while allowing our people to use the wood products from the Little Rockies.

Fire ecology and plant succession

The Fort Belknap tribal community controls some 30,000 acres of forested land in the Little Rockies. Over the past 100 years these woodlands have been swept by fires, nearly all of them man-caused.

We tend to view forest fires as a "bad" thing. Certainly those fires that have swept over the Little Rockies have not been good experiences for our people. Widespread fires in a small, dry mountain range can have a devastating affect. For us, fires can leave a dead, charred stand of ghostly trees on a mountainside that once held a cool, green forest. Thousands of trees that might have been harvested and used by the tribal members are destroyed in a matter of hours. But forest fire as an element of nature is neither good nor bad. It is simply a part of nature, like a thunderstorm or a volcano.

When viewed over all of western North America, during thousands of years, fires have burned and forests have grown in a never ending cycle. The earth and its living things are always changing and fire is just a part of that change. Tree species in these western mountains have adapted to living with fire. Fires bring the trees back to the elements of the soil, which in turn can grow new trees. Fires can even benefit the forest in the long run by helping to control tree diseases or insect infestation. Small, periodic fires help to avert larger, more destructive fires. Where man is not present in the forest, fires may be started by natural forces, such as lightening. When fire destroys a mature, forest stand, new kinds of plants and trees begin to grow in the barren fields. These plants are slowly replaced by different plants, until the original tree species return. One community *succeeds*, (or follows and replaces), the next, hence the name plant *succession*.

All plants compete with one another for sunlight, water, and soil. The first plants to re-establish themselves after a forest fire are the ones which need plenty of sunlight, and can grow well in open fields. Shrubs such as kinnikinnic and various grasses will spread over a newly burned area within five to ten years. The seed cones of the lodgepole pine open in the heat of the fire, giving this tree a "head start" over other conifers. Aspen, birch, and hawthorne trees are among the first to grow around these "parks", with unburned evergreen stands around the edges. Burned slump or draw areas are favorite locations for these deciduous trees, which thrive in moist soils. As the aspen trees grow to full size, they spread their new saplings by sending shoots underground instead of by seed germination. This forms the familiar dense stands of aspen. Where these stands form, the low bushes and grasses are shaded out, and they die off as the taller trees grow. But aspen seldom lasts more than 75 to 100 years. They mature and die, and become infected with diseases. The scattered lodgepole pine can now claim more ground. Ponderosa pine grows along with the lodgepole, and does especially well on warm, sunny slopes that face south or west. Thick stands of lodgepole pine continue to fill in the park

PLANT SUCCESSION - CONIFERS GRADUALLY FILL IN PARK AREAS

areas. These fast growing trees are very slowly replaced by Douglas fir trees, which need more moisture, but have the important advantage of being able to grow up through the shade of the other evergreens. As the Douglas fir grow tall they eventually shade out the ponderosa or lodgepole pines, which cannot tolerate shade. About 100 years after the fire, the Douglas fir trees take over and become the dominant tree species.

When this happens the forest is said to have reached the *climax community*. Climax is the final stage of succession where the species reproduce themselves and become self-sustaining. Different species cannot compete with these well adapted varieties. The land produces new growth at a much slower rate. As old, mature trees die, fall to the ground, and decompose, new trees of the same species grow in to replace them. This steady state is called *equilibrium*. The open parks give way to solid evergreen forests in most places. Once this happens, the forest will not change or see rapid growth of plants. It achieves the steady state of the climax forest. Either logging or forest fire will change this steady state, and start the succession all over again.

As we look at a forest at any given time, we see it as if it were a movie, and we stopped the projector on one frame. These changes are always taking place, and our lifetimes by the forest are but a few short frames in a very long "movie reel". The last big fire in the Little Rockies occurred in the early 1930's.

Today the mountains have many open parks and meadows, and large numbers of aspen and birch trees. If we watch the forest change over our lifetimes, we may see the evergreen trees slowly take over the open high ridges and park-like meadows and slowly replace the shrubs and aspen stands. But in our lives the forest would not change much unless man steps in to make great changes in

the plant communities (either by starting fires or by different timber management practices). The climate and topography of a forest community can in many ways determine how plants will revegitate in a given area. As a rule, south and west facing slopes receive more sunlight, are drier, and generally support more shrubs and grasses than trees. North slopes receive less sunlight and heat, and therefore hold the snowpack longer. These slopes are usually more densely populated with trees such as lodgepole pine. The ridges of Three White Cow Canyon offer a good example of the relationship between *aspect* (the direction which a slope faces) and the tree growth.

When conditions are right, the plants return in 20 to 30 years, and tree stands can grow and mature within 100 years. But why are some ridges in the Little Rockies still treeless even after 50 years? The Mission Ridge is an example of fire's long-term changing of the environment. Here the slopes face south or west. The soil on these warm hillsides was exposed to the sun, and was dried out. Plants did not germinate easily on a dry hillside. Without the living plant root systems to hold down the soil, the summer rains and runoff caused erosion, washing the topsoil down to bare rock in some places. In places where the soil has been badly eroded, it may take a thousand years for trees to return. Only shrubs which can thrive in shallow, rocky soil can maintain their hold on the slopes. Lichens, are a pioneer species which actually break down rock into new soil. These Lichens begin the soil-forming process, enabling other plants with roots to take hold. As these plants grow, die, and decompose, soil becomes deeper and richer, and eventually able to support larger plants and trees.

Arson and accidental fires

Arson is the legal term for the crime of deliberately starting harmful fires. By Autumn in 1979, three cases of arson resulted in the loss of over 100 acres to forest fire. These fires were set on dry, windy days, and could have spread out of control. As long as this kind of crime is tacitly condoned by the Hays/Lodge Pole communities, we will all live with the fear that some dry summer day our forest will once again burn while we watch.

Most man-caused forest fires are not deliberately set, but are the result of the public's carelessness. One in 1979 began in King Spring, Mission Canyon. By the time it was put out it burned over 123 acres and cost $46,000. This type of fire is costly and harmful to our scenic recreation areas.

Fire and wildlife

In our mountains, as in most places, the kinds of plant life determine the kind of animal life of the area. The Little Rockies are in a cycle of growth that occurs about 50 years after a fire. There are many open areas, which enable a variety of birds and animals to live here. Big game, for instance, cannot live inside an evergreen forest. Aside from the red squirrel, pine marten, and jay bird, very few species live in closed pine forests here in Montana. The open parks, brushy thickets, aspen stands and grassy slopes are the habitat of deer, bighorn sheep, rabbits, coyotes, and blue grouse.

Eagles, hawks, and owls circle the skies above our mountains in search of the many rodents which make their home in these fields and parks. Since there are abundant birch, aspen, and willows for the beavers to eat, the dams are plentiful in the stream bottoms, which contributes to good trout fishing. Beaver dams also serve as watering holes for deer and grouse.

Hikers and horse riders can move through the open country more easily than through a dense forest. For hunters, fishermen, hikers or wildlife watchers, it is nice to be here in these mountains fifty years *after* a fire. We should realize that, in managing the forest for nothing but harvestable timber, we could lose these other important uses.

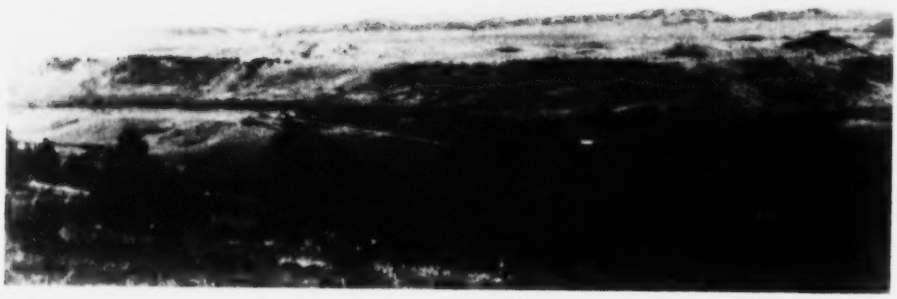


PHOTO BY MARK KODAY

OUR LAND IS IMPORTANT TO US *"because it is the only real thing we have left. I pity all Indian people who are selling their land to be rich for a short time, for a new pickup or car, or different material things. What they don't know is that after this they have nothing, not even lease money. Just Government Assistance or welfare.*

-BEENEFERD WING

Geology

The Little Rockies were formed during the period of mountain-building that occurred between 50 and 100 million years ago. This geologic activity occurred along with the uplifting of the Rocky Mountains. Molten rock spread up through the layers of existing sedimentary deposits. The volcanic activity pushed up

the layers of earth that had been deep beneath the surface. Much later, as the streams flowed, they cut away at this relatively soft sedimentary rock, exposing the "layers of time" we see today.

Fossil beds are found in the deep-cut canyons such as Mission, Jim Brown, and Little Chief canyons. Most of these fossils represent very ancient aquatic plants and invertibrates. These fossils date back to the Paleozoic Era, which lasted on earth from about 280 to 600 million years ago. During this period, oceans repeatedly covered this part of the northern plains. There was an abundance of marine and swamp life forms.

The fossils most commonly uncovered in the Little Rockies include ancient mollusk shells, from clams, snails, and other hard-shelled organisms. Marine plants such as crinoids are also common. These fossils are much older than the mountains themselves.

In other areas surrounding the mountains, more recent fossil forms, such as fish skeletons, may be found. These would date to the Tertiary Period, about 50 million years ago.

> *"Many of the Indians were hurt because the whiteman polluted the water and the air with their machines and their trash. They really changed the feelings of Indians toward this land. I think it's time that we Indians make a stand and fight for what is rightfully ours. We've got to show that we have a right to preserve the beauty of the land that God created."*
>
> -LAURIE FLANSBURG

Questions, discussion topics and assignments

1) *How* has the white man changed the feelings our people had regarding our land?
2) How much can we blame on the white man? Can we *continue* to blame him for everything that is wrong with Indian people?
3) Plan a hiking trail through the Little Rockies, starting at Beaver Creek, and ending near Eagle Child Mountain. In plotting your course, keep in mind scerery, steepness of terrain, existing trails, drinking water, and campsites.
4) Take a field trip to McConnell's lumber mill. Find out about the operation and observe its impact on the forest.

Project Learning Tree lends itself very well to forest and forest management activities. Please refer to this book for more assignments.

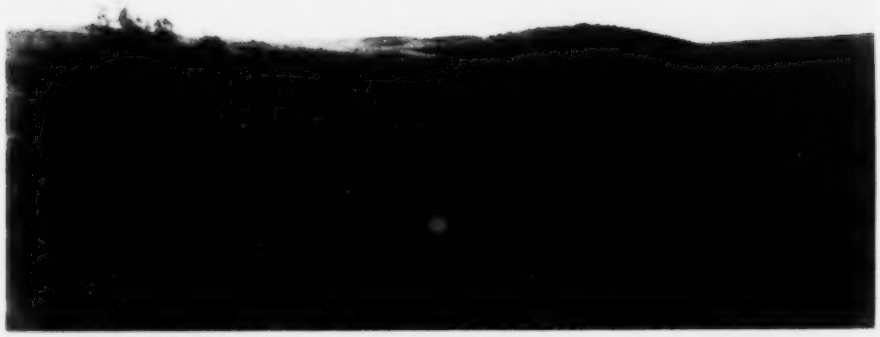


PHOTO BY ROB HUBERMAN

The elements of nature, such as sunlight, water, and minerals of the ground determine the kinds of plants which can grow in a given area. The plains country north of the Little Rocky Mountains receives little water. Ground water is deep beneath the surface. There is plenty of sunlight on the land. These particular circumstances are ideal for grasses so the dominant forms of plant life are prarie grasses. Certain shrubs and bushes can also grow here. Down in the depressions which we call "coulees", the ground holds more water than above on the hills or benches. Here plants such as rose and willow can grow. The soil beneath the range grasses is affected by the plants which grow there. Grasses grow each year, and as they die, there is rapid decay. This topsoil becomes dark and rich with decomposing plant materials.

Rangeland

The raising of cattle is by far the largest single use of this reservation's land.* Over 400,000 acres of our 600,000 acres is in range unit area's, managed by the Bureau of Indian Affairs resources department. These units are owned by the tribe, by individual tribal members, or by "undivided-interest" owners from the tribal community. Most of the land on Fort Belknap is leased to Indian and non-Indian ranchers of the area.

Cattle ranching on this land gives our area an annual income totalling from two to four million dollars. This includes lease receipts and profit from cattle

*Grazing is not permitted in the Little Rockies tribal timber reserve.

which is raised and sold as beef. Indian ranchers derive about 1.5 million dollars each year as a result of livestock production.

Since the tribe owns a substantial amount of land, it receives a yearly income from grazing land leases. This money is re-invested into land or goes to other tribal operations and services. This income results from the use of an important renewable resource - our rangeland.

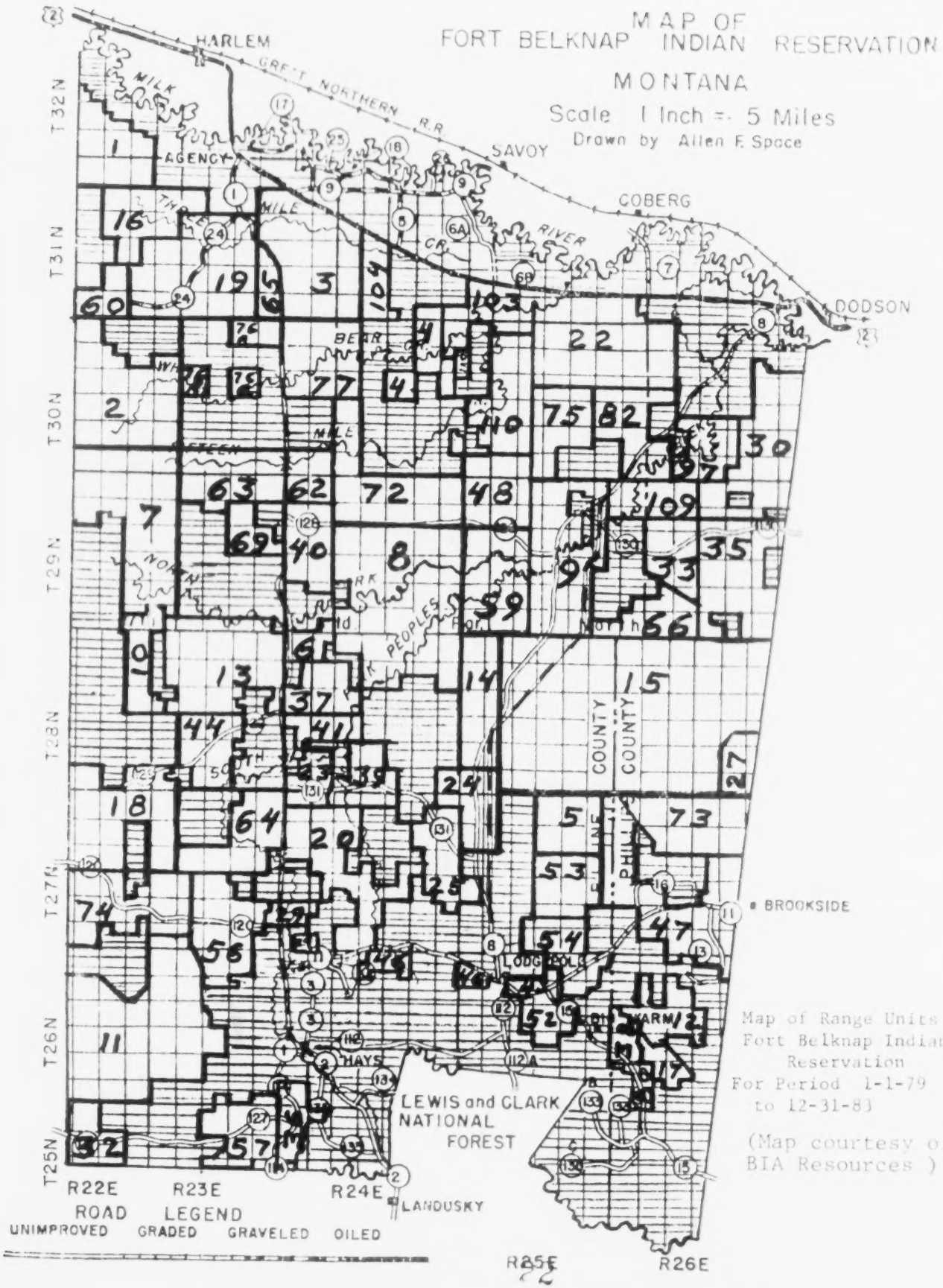
Rangeland management

In a natural state, all plants compete with each other for soil (nutrients), water and sunlight. Here at Fort Belknap, some of the dominant types of *forage grasses* (those high in nutritional value for livestock), are western wheat grass, needle and thread grass, and june grass. Domestic grazers prefer these grasses, so these are the plants they eat all the time. But too many animals grazing on the same area (overuse) puts too much pressure on these grasses. They become less vigorous, taking longer for regrowth. Other plants, known as *invaders* or *increasers*, which are not as desireable for their nutritional value, can then come in and take the place of the original forage grasses. Plants such as sage brush, club moss, and prickly pear cactus either *invade* or *increase* in number as the other grass varieties decrease. Once this happens it is very difficult, and many times impossible, to return the land to its natural state of mixed grasses, forbes, and shrubs.

To protect the land from overuse, there must be a balance between the amount of grass available for food, the number of cows or horses, and the frequency of use. Allowing enough time between grazing enables the plant to recover and therefore remain vigorous. The range specialists from BIA work to keep the land in full production while protecting it from overuse and eventual destruction. To maintain the balance between grazing use and range quality, the range specialists calculate *animal unit months* (AUM), or the amount of grass needed to carry a cow and her calf for one month. A horse normally eats from 50 - 100% more than a cow or steer.

Rangeland destruction is not always easy to see. Each year the BIA range specialists evaluate the range productivity, as well as its condition from the previous year's grazing. The proper numbers of grazing stock allowed on a range unit is figured on the basis of an inventory carried out by the BIA range personnel. When a grocery store takes an inventory, the store manager finds out what kinds of food is on the shelves and the quantity that is on hand. The range inventory is similar - the range specialists cover our giant "food store" and figure out how much food for livestock is growing on the reservation's grazing land. In order to do this they must cover many miles of land, and check for the various range grasses they know are good forage. They also find areas where the grasses are being taken over by other plants which have little or no forage value. Sometimes the amount of livestock allowed on a given range unit is higher, sometimes it is lower than in previous years.

May 15th is the usual date for herds to be turned out on the range for the summer. By this time the grass has had a chance to start growing and can withstand grazing.



Map of Range Units
Fort Belknap Indian
Reservation
For Period 1-1-79
to 12-31-83

(Map courtesy of
BIA Resources)

WILDLIFE ON THE RANGE

Wild herbivores (or plant eaters), are also found on the range along with domestic stock. These include not only deer, antelope, (and occasionally, elk) but smaller creatures such as rodents or birds. For example, field mice and sage hens both utilize plants for part of their diet.

It is important to realize that deer and antelope do not compete directly with livestock for the food supply. These wild grazers prefer shrubs and forbes, while livestock prefer grasses. Deer and antelope naturally seek the leaves and bark of shrubs, but in fall, when the shrubs shed their leaves, these animals will take an interest in a rancher's haystack. Still, we must allow a place on our homes for wildlife as well as our domestic stock.

If our Indian people can claim an "aboriginal title" to the land based on the fact that "we were always here - always part of the land", then this claim should also be considered valid on behalf of wildlife.

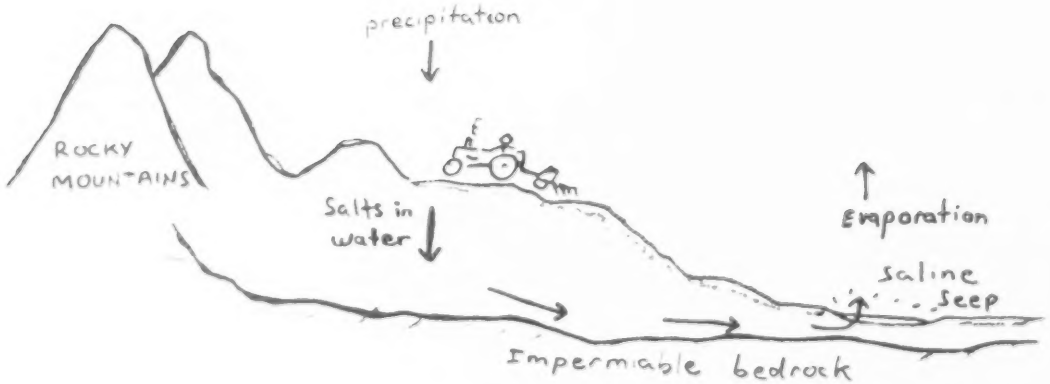
Since the last ice age, the high plains and mountains of Montana have been home to an abundance of wildlife, all living in nature's endless concert. The grasses were rich in nourishment, and could support huge herds of buffalo, as well as deer and antelope. Wolves, coyotes, mountain lions and the fierce plains grizzly bear roamed the open miles in search of prey, keeping grazing herds at a natural, steady number. When the early white explorers and trappers came up the Missouri, they found bighorn sheep along the high cliffs, waterfowl, and fur bearers in the streams. In fact, most of the animals that we find today in our high mountain wilderness areas, such as Glacier Park or the Bob Marshall, were originally creatures of the high plains. It was not until the westward expansion of settlers that much of wildlife was driven up into the mountains, where they live today. When the Mountain Men spoke of being "in the mountains", they were referring to the upper Missouri River country, including the broad valleys such as the Judith Basin, or the Milk River. Native peoples had been in this country for many centuries, hunting and gathering the rich source of edible plants and wild game. It was not until sometime in the early 18th century that our tribes such as Blackfeet, Gros Ventre, Sioux, or Assiniboine came into this country on horseback, to follow the buffalo. These hunting plains Indians found the land as it had been for ten thousand years. The changes we have made in only 100 years have had a profound effect on wildlife. We must be aware of their problems if our wildlife is to survive.

Saline seep

Saline seep is the term used to describe the accumulation of salts on the soil surface. The problem is a direct result of man's cultivation of the northern great plains. Today there are 120,000 acres lost to saline seep in the state of Montana. It is found in 36 of the 56 counties, including Blaine and our reservation. Soil scientists see potential loss of 128,000 square miles of land in the northern plains, as a result of saline seep. One third of Montana could be lost to seep areas.

Montana's land east of the divide is susceptible because of the soil contents and the subsurface geology. During the Ice Age, *glacial till*, (mineral debris carried down with glaciers) gave our soil a high salt and mineral content. The native perennial range plants adapted to life on the dry plains by holding water near the surface of the soil. Water and mineral nutrients were cycled through the community, and deep ground water was not disturbed.

When agriculture came to the plains, cultivation practices upset the delicate balance of plant, soil, and water. The cultivated fields permit the water to flush down through the soil. Without the native plants to hold in the water and minerals, salts are carried down through the porous layers of soil and rock until they reach the impermeable layer of shale bedrock. When the salty water reaches the shale, it flows down-slope, away from the Rocky Mountains and out beneath the lower plains. As the elevation of the plains becomes lower, to the east of the mountains, the shale layer runs closer to the surface. The salt-laden water collects in these low lying plains, and brings the salt back to the ground surface. The water evaporates, leaving greater and



SIMPLIFIED DIAGRAM OF SALINE SEEP

greater concentrations of salt on the top of the ground. Plants cannot tolerate such a high salt content, so the land becomes barren. It is then totally useless for either range grass or crop production.

The problem began to surface in the 1930's, when the new practice of summer fallowing became widespread. This had the affect of draining the water down through the ground, taking the salts along with it, since there were no longer plant roots to hold it. By the 1970's the problem was widespread, and large saline waste areas were emerging at an alarming rate.

One solution to the problem lies in the planting of deep-rooted perennials, like alfalfa, sunflowers, etc. The roots of these plants hold the water near the surface, and prevent the downward flow of salt and water. But farmers are reluctant to change their methods, and the problem of saline seep continues in Montana and elsewhere. The "culprits" are those farmers in the high bench country along the Rocky Mountain front. The "golden triangle" near Great Falls contains a vast area of farms. These farmers do not suffer from the seep, since they are on high ground, well above the subsurface impermeable shale. The saline water which washed through due to their farming practices finally emerges in the lower plains, including Fort Belknap. Here their unsound farming practices are being felt. One example of saline seep can be seen along the highway in the coulee north of People's Creek, or "Halfway".

Conservation-till farming is now being practiced in many areas by concerned farmers who care about their future generations. These practices include the method of leaving the cut stubble on the fields after harvest. The field is left until the next planting, and is then seeded right through the stubble. Saline seep will continue to plague agriculture on the plains, but careful farming practices can slow its advancement.

Predator and pest control

People who do not understand nature tend to group animals into "good guys" or "bad guys". The good guys are protected, while the "bad guys" are treated with contempt. Animals like rabbits or deer are seen as cute, gentle animals. But snakes, or wolves are described as treacherous, vicious creatures. As a general rule, organisms that: 1) potentially threaten man's health (the rattle snake), 2) prey on game animals (the coyote), or 3) eat crops, or otherwise interfere with agriculture, are thought of as a challenge to man's supposed dominance of the natural world. But only those who are out of tune with nature would seek to dominate or destroy such important members of the wildlife community.

Predators serve several important functions in nature. The predator kills and eats the slow, weak or otherwise infirm animals of a given herd or population, thereby insuring that only the strongest will survive. Over the years this has caused genetic changes that have improved the overall strength of the species. Deer, for instance, have no doubt developed greater speed and endurance, keener senses, and better protective instincts, partly due to the constant pursuit by the coyote, wolf, and other predators.

Perhaps the most important talent of predators on Fort Belknap is their ability to control and balance populations of many types of organisms in the ecosystem. For every occasional fawn that is eaten by a coyote, this predator may eat 100 mice, gophers, moles, grasshoppers, or rabbits. Rattlesnakes very seldom bite people. But they do eat thousands of mice and other rodents.

What would happen if predators were not present in the ecosystem? The rabbit problem in Australia is a good example:

> In 1859, British sportsmen brought 12 rabbits "down under", for sport shooting. But unlike most ecosystems, the isolated continent of Australia contained no natural enemies (predators) of the rabbit. By 1953 the rabbit population had exploded, from twelve to over 1 billion! Today these rodents eat enough plant food for 100 million sheep.*

When our coyote population is heavily pressured by hunting or trapping, we experience a proportionate increase in rodent populations. When animals such as mice, rats, gophers or rabbits get out of control, they compete with our livestock, destroy grain, and cause damage to trees and shrubs. As long as they are held in check by predators, they too will live in balance with the rest of the ecoysytem. We can continue to harvest coyotes, or other predators which exist in stable numbers, as long as we do it in moderation.

The prarie dog is considered a pest to Fort Belknap's ranchers, since it eats range grass and establishes "towns" in pasture lands. Poisoning programs have been conducted to keep prarie dog populations down. Prarie dogs once covered a wide range in the Great Plains, but as farms and ranches encroached on their territory, the towns have dwindled. Today prarie dogs live on the few wilder, more primitive environments such as the Missouri Breaks and the praries of our reservation. Like the eagle, this creature is common on Fort Belknap, but rare elsewhere.

---

* Man and the Environment Notes; Don Collins, Montana State University

The black-footed ferret is a small, weasel-like carnivore that feeds almost exclusively on prarie dogs. This ferret, like his brother the plains Indian of yesterday, has made the evolutionary mistake of specializing on one food source. When the buffalo were removed from the plains, the Indian's way of life was over. If the prarie dog is removed, the black-footed ferret may travel the road of no return - to extinction.

While some organisms are a nuisance to agriculture, many of the control methods that have been used have been worse than the organism itself. When coyotes were being poisoned with sodium fluoroacetate, or "1080", this extremely deadly poison also killed eagles, rodents, foxes, magpies, and any other animal that fed on the poisoned carcass. Other poisons such as arsenic, or cyanide got into the food chain causing damage to a host of other wild creatures.

The most dangerous poisons have been banned thanks to pressure from environmentalists. Predator poisoning on public lands has ceased, and the chemicals available to farmers and stockmen are generally not *persistant* (do not move through the food chain). More often than not, when man meddles with nature, the results are worse than if he had been wise enough to find other ways to adapt to the problem. Dumping deadly chemicals is a poor solution to animal population control. As Indians, we ought to respect the ultimate wisdom of Nature, and interfere with her as little as possible.

Questions, discussion topics and assignments

1) Find out about the *edge effect* on farmlands.
2) What other farming practices would be beneficial to wildlife?
3) While fertilizers, herbicides and pesticides cause environmental problems, they also serve to benefit mankind. How are these chemicals important? What would happen if we stopped using them?
4) Find out about organic farming. Write a report or research paper on this subject.
5) Explain why the horse is a very special animal on our reservation.
6) Are there other types of agriculture that could be successful on this reservation? Discuss.
7) Keep a notebook which describes the location of saline seep areas on the reservation. Write an original research paper on the subject.

Similarities between the plains Indian and the eagle:

1) Both were good hunters.
2) Both required a large hunting territory.
3) Both were "wild and free". (compared to 19th century white society)
4) Both were seen as a threat to the white settler.
5) Both were killed in large numbers by the white man.
6) Both now occupy a small fraction of their original home range.
7) Both are still misunderstood by today's society.

Give other similarities between the plains Indian and the eagle.

Is it bad medicine to kill the eagle? Discuss.

PHOTO BY ROB HUBERMAN

"It is desert influence that makes water more important than land in the West."
-WALTER PRESCOTT WEBB*

Although the reservation is dry country dominated by rolling praries and open, forested mountains, there are actually 243 reservoirs and 17 streams within the boundaries. The largest stream is the Milk River, which heads in the Rocky Mountains of Glacier National Park, and flows about 250 miles to its confluence with the Missouri River. Although it is only 30 air miles across the top of the Fort Belknap Reservation, the Milk River, with its twisting meanders, actually runs for nearly a hundred miles, forming the northern boundary. It is the major source of irrigation water for the valley, supplying the farms near the river. It also serves as the city (or domestic) water supply for Fort Belknap Agency. Peoples Creek drains from the Bear Paw Mountains and runs northeast across the middle of the reservation. The Little Rockies give rise to three main reservation streams: Little Peoples Creek, Lodgepole Creek, and Beaver Creek. In an area as dry as ours, there is great seasonal fluctuation, (or change in flow) in the streams. Most stream flows are *intermittant*, that is they run during part of the year, but eventually dry up until the next spring thaw.

The streams in the Little Rockies can be puzzling to the observer. While most streams flow continuously down the surface of the stream bottom, these creeks can perform a "disappearing act" for a long stretch, then re-emerge on the surface, and continue their flow across the foothills. This can be explained by the presence of limestone throughout the mountain range. This type of rock

---

* from K. Ross Toole; The Rape of the Great Plains; p. 32

allows water to seep or run down through surface openings, and continue to flow *beneath* the surface. Eventually, the *subterranean*, or underground water rejoins the surface at a lower elevation. The only time Lodgepole and Beaver Creek flow continuously along their surface channels is in the spring and early summer.

One such stream, flowing from Porphery Gulch, in Lodge Pole Canyon does an amazing "disappearing trick". The water courses through a "v" shaped canyon of folded, flat (sedimentary) rock, cascades about 100 feet over a limestone cliff, runs down from the pool at the base of the waterfalls for about 50 yards, and simply disappears into a hole in the rocks, behind a small boulder! The gravel in the stream bottom right below the hole is bone dry. This little waterfall runs only during the main spring snowmelt. In a year of heavy snow accumulation, it may last for as long as a month. During a dry year, like the spring of 1980, it lasted less than two weeks.

The mountain streams have flowed for many thousands of years, and have been responsible for the awesome rock cliffs of Mission and Little Chief canyons. Each year the streams do their beautiful sculpting work on the rock, though in a lifetime we could not actually see the change.

Out in the open country the streams flow through the coulees, and would eventually drain into the Milk River. The only chance we have to capture this water and hold it for summer use is by building impoundment reservoirs. Most of these are simply small stock ponds with a cement and earth filled dam on the downstream end. In some places, natural depressions, or basins in the plains can form water holes. One such basin can be seen across from the "Old Highway Church", on Highway 2, about seven miles east of Fort Belknap Agency. These basins are wonderful places to raise prize-winning mosquitoes! Other reservoirs are considerably larger than the small stock ponds and watering holes.

LAKE SEVENTEEN

PHOTO BY ROB HUBERMAN

Lake Seventeen, west of Three Buttes is a large and fairly deep body of water covering 760 acres, on a big tribal range unit. It is important for stock watering and as a home for fish and waterfowl. Wiegand Reservoir, south west of Dodson is our largest reservoir, covering 1,100 acres across its surface. It contains several small islands which are suitable for waterfowl nesting. Islands can isolate the birds from predators such as coyotes or weasles. Wiegand Reservoir also supports a trout population.

On some reservoirs, fences have been built to cordon off special shoreline areas to allow for waterside plant growth. As these cattails, willows, and other shrubs grow along the shore, they provide cover for birds and small animals. The smaller animals attract larger ones, and soon a wildlife community has been established. But some cattlemen feel that only their cows have the right to use the reservoir. Fences have been torn down and trampled, allowing stock a free run of the entire shoreline. Plants cannot grow under this kind of annual trampling. We should use suitable reservoirs for wildlife areas as well as for stock watering.

Beavers: natural water engineers

ONE OF THE MANY BEAVER DAMS IN THE FOOTHILLS OF THE LITTLE ROCKIES

PHOTO BY ROB HUBERMAN

The beaver is an amazing little animal. Its ability to construct solid dams out of wood, mud and stone has both fascinated and perturbed its human neighbors. Some North American beaver dams have measured over 100 meters long, and were built by teams of cooperating beavers! The beaver builds dams mainly to provide a safe, underwater entrance to its home, which is built of twigs, sticks, and mud. They sometimes burrow dens into the banks of a stream.

During the summer months they collect and store green twigs and shoots from willow and other trees. They feed on the moist bark of leaf trees, which they gnaw around in a circle until the tree falls. They prefer the aspen, birch, maple and willow that grow in the stream bottoms of the Little Rockies. In winter they feed on these stored plant foods. Beavers form mated pairs, and the young are born once a year in the spring. There are usually from 2 to 4 kits per litter. Though tiny at birth, they can grow to weigh from 30 to 60 pounds.

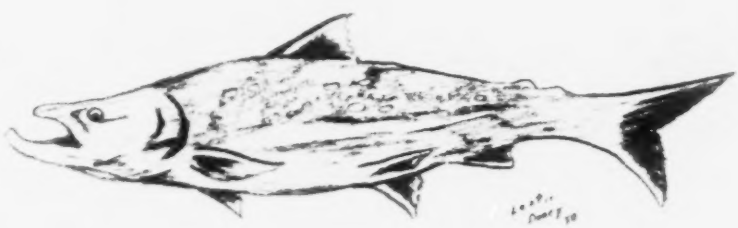
While some beaver dams are placed where the streams flood farmers pastures or hayfields, the majority of beaver activity is beneficial to our community. The dams up in the mountains serve as natural reservoirs, and help to regulate stream flow by "metering out" water over the dry months. Streams where there are no beaver dams often dry up within a mile or so of their source, but where a series of dams have been built, the water flows more constantly. Frogs, water birds, fish, muskrats and other organisms benefit from the ponds, and larger animals such as deer or bobcats will use the area for drinking water.

The fur of the beaver is valuable, and the meat is tasty when properly dressed out and prepared. The beaver is an amiable enough neighbor for man, and overall, is much more helpful than harmful. Care should be taken to protect the beaver. Trapping and harvesting should be done in a way that will not remove all of the beavers from a given area. Dynamite or other destructive methods of removing dams (and beavers) should be discouraged. After all, that is no way to treat a neighbor!

Fish habitat

According to the U. S. Fish and Wildlife Service, there are some 35 different fish species found in Fort Belknap's waters including those found in our section of the Milk River, the Little Rockies drainages, and various reservoirs around the reservation. There are two basic kinds of fish habitats on our reservation: warm water fisheries and cold water fisheries. The shallow reservoirs to the north of the mountains and the Milk River contain warm water species such as catfish, carp, sauger, and goldeneye. When these waters are sufficiently cold, they may also contain northern pike. The cold, clear running mountain streams in the Little Rockies, as well as the deep lake formed by Snake Butte and Wiegand Reservoir serve as good habitat for cold water species such as rainbow trout, and brook trout, as well as smaller fish like the longnose dase.

Most of the reservoirs on Fort Belknap are simply too warm and shallow to allow for a population of the larger fish. In summer, they may become too warm for the fish to survive. In winter, if there is not enough water, the surface



ice can seal off the water's oxygen supply, causing the fish to suffocate. If it gets cold enough, the depth of the ice can also kill the fish. This is known as a "freeze out".

The beaver ponds in the Little Rockies surrounding foothills provide a good natural habitat for trout as well as smaller fish. Many of our tribal members enjoy fishing in these areas around Hays, Lodge Pole, and Beaver Creek. Fishing is an important pastime for our people, for it gives us a chance to enjoy the outdoors, the beauty of our streams and ponds, and, of course, food for the dinner table! Our fish and their homes are valuable natural resources.

Gold mining vs. our watershed

The continuing history of gold mining in the Little Rockies is one of conflict with the reservation. Our people have never received fair treatment or compensation and the mining companies have repeatedly prospered at the reservation's expense. In 1896 the tribal council, ignorant of their rights, were coerced into ceding the mineral-bearing portion of the Little Rockies. While the tribe was paid $360,000 for the land, some $25 million in gold has since been removed from the mountains.

The mining companies operated in the headwaters of the north flowing streams, allowing great quantities of tailings (pulverized rock) to wash down stream. These tailings were carried far downstream from King Creek into Little Peoples Creek, then into the foothills below Hays. They clogged the farmers' irrigation ditches, and disrupted the flow of the stream itself. Beaver ponds filled with silt and were destroyed.

The mines used the process of cyanide leaching, a method in which a solution of cyanide is sprinkled over crushed ore to chemically remove the heavy metals. Gold was separated from the ore, but so was the lead, zinc, and arsenic contained in the rock. Today our waters are still polluted by these dangerous elements. Lead is poisonous to fish, and, if ingested in enough quantity, can produce horrible illness and physical deformation in human beings.

The mining being done today involves stricter environmental safeguards. Thanks to important environmental laws passed in the 1970's, they operate under a "closed-system". Ideally this means that the toxic substances are not allowed to flow down into any streams. They are collected and disposed of more safely than in the old days. But mining companies are not known for their concern for the environment. The Zortman and Landusky mining companies have applied for a discharge permit, which would allow a certain amount of dangerous substances to flow into streams near the mines. Water tests taken in 1979 showed the concentrations of lead in the water to be 1200 times the maximum allowable for human consumption. Arsenic was 300 times the allowable maximum and cyanide concentrations were also high.

Though at one time the trout populations in Little Peoples Creek were decimated, the fish have been re-established, and are becoming more abundant. Fish suffer

when elements such as lead and mercury accumulate in organisms within the food chain. Once it is ingested into the body of the organism, it has no way of getting out. It builds up in the vital organs or in the flesh. It is not known whether or not the trout we eat from Little Peoples Creek contain dangerous amounts of lead or arsenic, but there is a potential for this danger.

They are still mining in the headwaters of our streams, and their machines tear up more land each day. As these steep slopes are bulldozed, the rock and soil is subject to erosion, and could cause more problems in the streams in the form of water siltation. The mines disturb wildlife, and in general ruin the peaceful character of the Little Rockies.

In 1979 the tribal council made an effort to block the re-opening of the mines, but the Department of State Lands granted the permit anyway. We face a twenty five year wait to see if any land reclamation can be achieved in the area. Legally, the damages done in the past are no one's responsibility, and tailings continue to wash down through broken-down retention bulkheads, especially after heavy rains. Further mining development could bring the mining operations farther north into the range, and down into our stream drainages. This could be environmentally devastating for the Little Rockies, and citizens of Fort Belknap would probably fight any efforts to increase mining activities. But will the Department of State Lands again grant permission anyway?

The high price of gold on today's market would indicate that we may be in store for more trouble in our mountains and with our water. Unless the reservation can regain the lands to the original boundaries, it will be difficult to fight the mining companies and the Department of State Lands. The tribal council is in the process of working within the legal system to regain control of the mountains. Through tribal control, our people could effectively halt further mining in the Little Rockies.

"The Little Rockies mean so much to me, I can't explain it exactly. For one thing it is the minerals (gold) which is so valuable today. The white men stole almost all the mountains from us, and now they are digging out all the gold which should have been ours in the first place. Our land is a very valuable asset. Its value increases constantly."

-JOHN CRASCO

The Winters Doctrine

The Winters Doctrine is the name given to the 1908 U.S. Supreme Court decision in the case of Winters vs. Fort Belknap Reservation. This landmark decision set a legal precedent for future conflicts concerning Indian water rights. In 1898 a non-Indian farmer named Winters decided to divert a substantial amount of the flow from the Milk River. The diverstion did not allow the reservation enough water for its needs, so BIA Superintendent Luke C. Hays filed suit in court. The case was appealed all the way to the U.S. Supreme Court, and was decided in favor of the reservation.

The decision held that all waters rising on, flowing through, or bordering an Indian reservation are the property of that reservation.

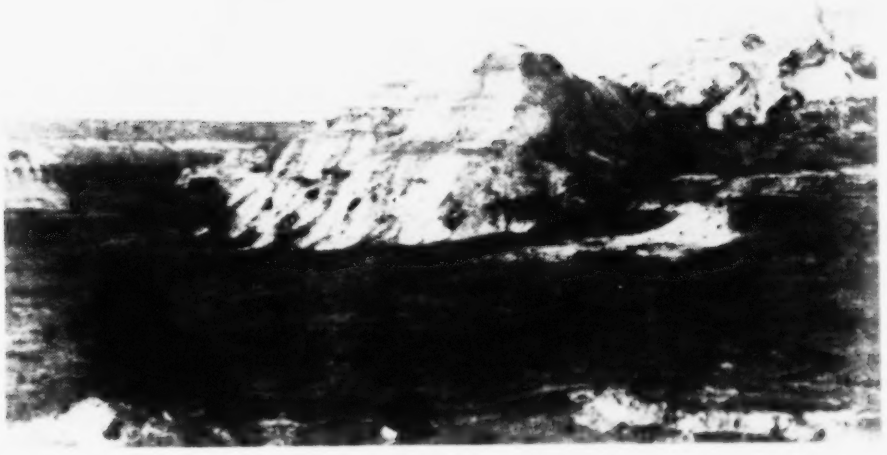
Future cases concerning Indian water rights have challenged the Winters Doctrine, and the ultimate answers to just how much water a reservation can control is yet unanswered. As industry makes heavier demands on Montana, water rights will become perhaps the single most important issue in the struggle between Montanans and "King Coal". As future leaders of our reservation we have a responsibility to protect the water we need for the traditional demands which we already place upon it. Otherwise, as Ralph Nader said, *"The Indians [will be] sold down the river."*

Questions, discussion topics, and assignments

1) Study *pond succession* in an ecology textbook. Find examples of different stages of succession in Hays or Lodge Pole.
2) Discuss beaver dams with local landowners. What are some of the problems caused by the dams? What does the landowner do about the dams? Is the landowner sympathetic or unsympathetic towards beavers?
3) Interview John Capture, (Tribal Planning Office) for historical information on mining in the Little Rockies.
4) What other fish species are found in the local streams or reservoirs besides trout? How do these fishes inter-relate?

"The Little Rockies mean a lot to me because they have many natural resources - forest land, water, recreation, minerals, shelter, and plants for medicine and food. The biggest problems the people of Fort Belknap face today are unemployment, alcoholism, no law and order, especially in Lodge Pole. We need more day care centers, and foster homes; more health care, and good education. My land is important to me because this place is home. I have never lived anyplace else, and don't plan to move. I live on my own land"

-VERNIE BELL



COW CREEK BREAKS COUNTRY

PHOTO BY MARK KODAY

Over the course of three hundred years, the land we call America has undergone a tremendous change. What was once a huge, unspoiled wilderness has, in a short time, become civilized and industrialized to the point where very little of its original wilderness remains today. But for the past one hundred years, we have seen a steady growth in the belief that natural, wild country is an important and priceless part of America. Many prominant American leaders have worked to save and protect our country's wilderness heritage.

Wilderness characteristics

The Wilderness Act of 1964 marked the beginning of the national wilderness preservation system. The intent of the Congress of the United States was "to secure for the American people of present and future generations the benefits of an enduring reservoir of Wilderness." Most of this land has been selected from either Forest Service or Bureau of Land Management administered lands. What is the modern-day meaning of wilderness?

During the year 1980 - 1981, the BLM is in the process of conducting a search or inventory of all public lands that have wilderness characteristics. The BLM defines those characteristics by the following:

> "...areas which, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean an area of undeveloped Federal land

> retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable it's preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

There are several wild areas now being considered for wilderness designation that are adjacent to the Fort Belknap Reservation. The decisions that are made will affect our lives and the lives of future generations here at Fort Belknap.

One area lies in the center of the Little Rocky Mountains, encompassing 6,900 acres. The BLM description of this area follows:

> "The Little Rockies unit contains approximately 6,900 acres of mountainous terrain covered with ponderosa pine, Douglas fir, lodgepole pine, and deciduous shrubs. Intrusions consist of old mining digs, five roads and four heliports. These intrusions do not significantly detract from the naturalness of the area.
>
> Outstanding opportunities for solitude exist even though off-site mining can be seen from high points. Opportunities for primitive forms of recreation such as hiking, wildlife observation, backpacking and photography are also outstanding. The unit meets the minimum criteria and is therefore recommended as a wilderness study area."*

A much greater area is under consideration in the Missouri Breaks, just south and west of the reservation boundary. There are actually five parcels under consideration, each adjacent to the next in a way that could form one large wilderness of over 125 thousand acres. These include: Chimney Bend - 16,160 acres; Woodhawk - 16,300 acres; Ervin Ridge - 22,480; Cow Creek - 50,000 acres; and Antelope Creek - 20,600 acres. The following are descriptions of two of these areas:

> "The Cow Creek unit lies in Central Montana along the southern Blaine and Phillips County borders. It is 60 - 70 miles south of Harlem and extends from the north shores of the Missouri River.
>
> The unit's size during the initial inventory was 71,113 acres. Roads and unnatural areas that reduced the recommended acreage to approximately 50,000 acres were identified during the field inventory. Two areas were not recommended for Wilderness Study due to an unnatural appearance.

---

*Data from the BLM Montana Intensive Wilderness Inventory; p. 35

The 50,000 acre area that is recommended for future wilderness study has a rugged and dissected appearance formed by many drainages that feed into Cow Creek. Where soils are not too steep or eroded, the terrain is covered by prarie grasses and low lying shrubs. The terrain also supports sizeable conifer forests. The pockets of tall growing vegetation, the area's large size, and the "breaks" topography provide good visual screening. These factors screen the area's few impacts and preserve a natural appearance. These factors also provide outstanding opportunities for solitude. There are several forms of primitive and unconfined recreation offered within the unit. Although the individual activities alone cannot be considered outstanding, the large diversity and their quality can provide opportunities for outstanding experience. A portion of the unit has all of the characteristics necessary for wilderness study recommendation."*

"The 20,600 acre Antelope Creek unit is located in the southeastern part of the Phillips Resource Area. The unit is west of Highway 191 and is partly bounded by the "Upper Missouri Wild and Scenic River". The unit also borders the Charles M. Russell Wildlife Refuge's Antelope Creek wilderness study area of 5,062 acres which was recommended as wilderness by the U. S. Fish and Wildlife Service.

The unit lies in the Missouri Breaks and aside from range management developments (reservoirs, fences, and a few vehicular ways) the area is still apparently natural. The size of the unit, combined with the breaks topography provide an outstanding opportunity for solitude. The area has diverse recreational activities that provides outstanding opportunities for hunting, horseback riding, exploratory hiking, backpacking, photography, and fishing.

The area has all the characteristics necessary for wilderness study recommendations." **

Wilderness and the Fort Belknap economy

If the possible 125,000 acres of wilderness lands in the Missouri Breaks is established, it could bring benefits to our communities. As it stands now, the "Wild and Scenic" portion of the Missouri River runs from Fort Benton and extends to Kipp's Park, at the Fred Robinson bridge across Highway 191. This river has achieved immense popularity and national attention from canoeists and floaters across the United States. Many people float the river each year,

*Data from the BLM Montana Intensive Wilderness Inventory; p. 27

** Ibid. p. 29

beginning in spring, and extending through the summer, well into the fall season. Hays happens to be the closest town (along a major highway) to the stopping point for river travellers. Hays would also be the nearest town to the wilderness area, lying only 15 miles away from the boundaries.

If the area is designated as wilderness it could bring the economically depressed area of Hays/Lodge Pole the potential for a clean industry. This would bring money from outside into the area. Such an industry would be environmentally sound, and would not sacrifice our land or disrupt our way of life Business opportunities for tribal members could include guest accomodations, guide services, transportation service, horse and equipment rental, restaurants, auto garage, and others. Sale of art and craft work would become much easier. The popularity that the river already enjoys would add to the interest in this new wilderness area. The reservation would have nothing to lose should this area become part of the wilderness preservation system.

SANDSTONE FORMATIONS AT BULL CREEK, MISSOURI BREAKS

PHOTO BY ROB HUBERMAN

THE BIGGEST PROBLEM THE PEOPLE OF FORT BELKNAP FACE TODAY IS *"Alcoholism and unemployment, especially in the south. Very few of the people are employed from out here, probably only about twenty or so. As a result, the younger generation are parking on the hills drinking beer day and night, and getting into trouble."*

-DORA HELGESON

Wilderness preservation

If the area is allowed to be developed by energy or mining interests, the wildlife habitat would no doubt suffer. Since many of our wildlife species are part of a larger community, which extends far from our reservation boundaries, we stand to lose an important biological "reservoir" of game animals. Our hunting, for example, could be adversely affected by development of the breaks and Missouri River areas. Since most energy and mining corporations are out-of-state owned, and run by technicians, we would derive neither capital income nor many jobs for our people.

There are compelling reasons why wilderness preservation is essential to our well being as a part of the United States, or as an Indian nation. In the words of conservationist David Brower, *"The wilderness we now have is all men will ever have."* If we do not act now to save what little is left, there will be no wild country left to find. It should be the right of future generations to experience and understand wilderness.

It is further argued that wilderness has always had a very important influence on Americans, and has shaped our unique national character. Wilderness is part of our American "roots". Many people feel that we must go out into wild country from time to time in order to maintain our health and sanity in today's increasingly stressful and troubled world. And nowhere could people find such all encompassing beauty as in the wilderness.

From a scientific point of view, wilderness has been deemed necessary as an ecological "reserve" of the many plant, animal, insect, and aquatic life found in natural places that are unspoiled by man. Scientists can look to wilderness as an example of a healthy, natural ecological community, and compare this with the places which man has altered. Animals such as the grizzly bear or bald eagle require wild country just to live. Without it, they may become extinct within our lifetimes, despite the efforts of man to save them.

Nearly every aspect of Indian culture is directly tied to the earth, and to wild country, freedom, and harmony with nature. To lose wild land would be to lose that which separates the Indian from the mass society of industrialized America.

Opposition to wilderness preservation has come from some foresters and wood-using industries, energy and mining interests, ranchers, and the companies who build mass-recreational equipment such as off-the-road vehicles. These groups express the belief that wilderness "locks up" land from any of these uses, and therefore is not in the public's best interest. It is important to realize, however, that development interests have access to 98% of America's land, and that they are, if effect, asking for 100%. The decisions we make today will decide the fate of some of the last remaining wild country in America.

By October 1980 the BLM will have made its recommendations to Congress. The citizens of Fort Belknap, through private effort or tribal council resolution, can encourage Congress to approve this legislation. We should stay informed about these decisions that can affect all of us. A persistant and united

response by the people of Fort Belknap could effectuare the designation of these lands as part of America's wilderness system.

Nature, a Relative of the Indian

by Darwin LongFox

Nature and the Native American Indians go way back. Nature, I guess you can say, has been like a Mother to the Indian people. The Native Americans depended mostly on nature for their survival, and could always rely on her to satisfy their needs.

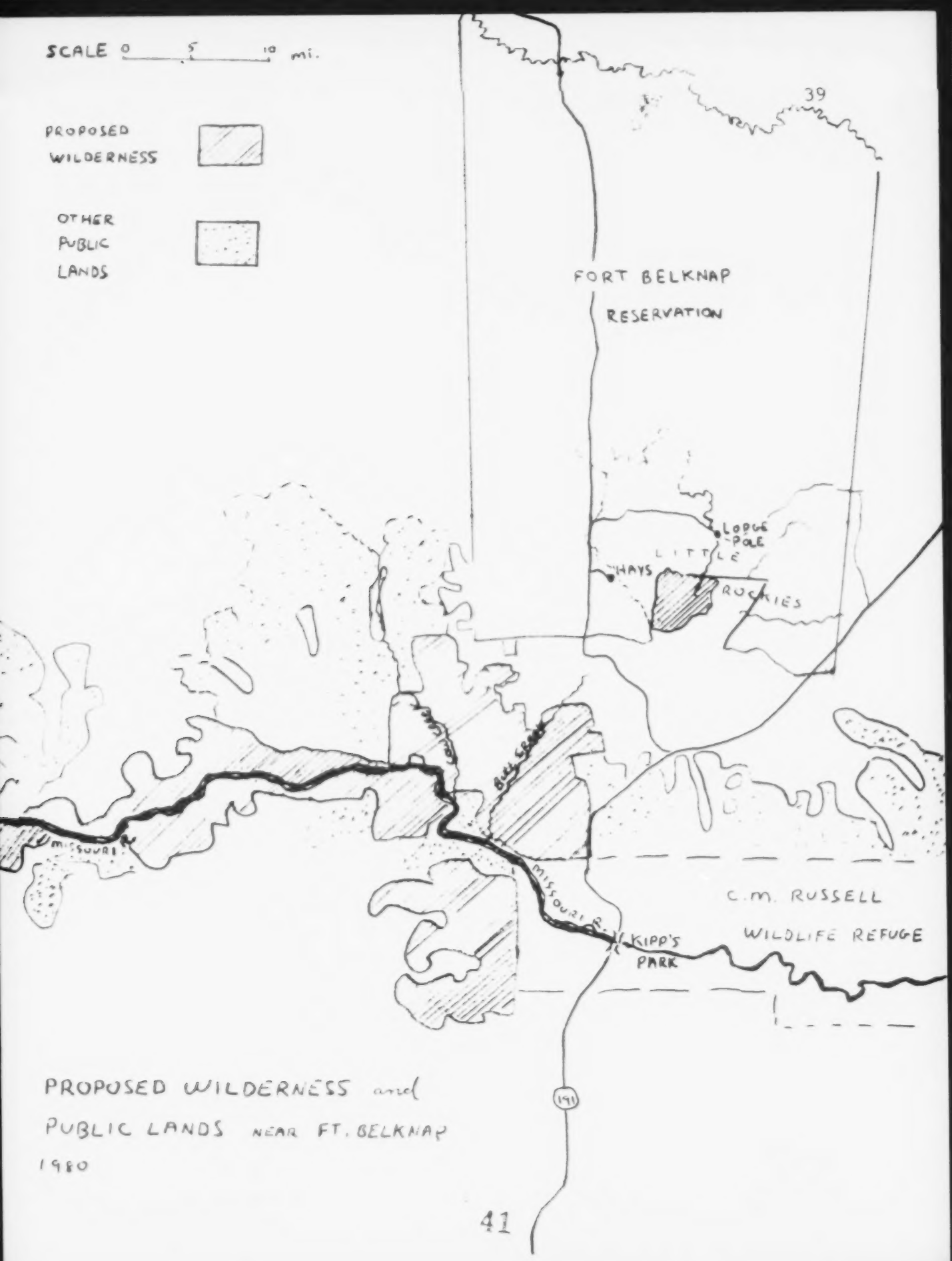
Nature has always supplied food in abundance, whether it be from berries or meat of wild game, the Indians always took the amount that they needed, and used it to bring nutrition to their bodies. Nature also supplied the Indians with shelter and clothing. Some Indians would take the hides of the animals they killed, and make clothing and shelter, while others used trees, brush and mud to make their homes. The Indians moved around a lot and depended on nature to get them from place to place. They used the horse to travel on the land, and logs to make boats for water travel. The Native Americans have always loved the land that they lived on, and recognized nature as a living thing. They never took from nature what they didn't need and never took advantage of her. But what do the Indian people feel about the land today? Do they still love and respect it as their ancestors did?

Times have changed considerably and so has the Indian's feeling for nature. Today they can't seem to see her value. They have forgotten that nature has brought them a long way, and no longer recognize her as being alive. Indian people today take great advantage of the land. Nature still supplies man's need of food, but man now takes more than what is needed, causing much to go to waste. Nature has always showed the Indians great beauty, and today this beauty is still adored by the Indian people. But today they don't seem to want to keep this beauty. They are allowing the land to be wrecked and destroyed. They are digging up the ground - ugly sights to look at. They are throwing their trash wherever is convenient, leaving the land looking like a dumping area.

It would be a shame if our ancestors could see their little brother to day. What would be their reactions and feelings? Would we see tears roll down their cheeks as they step on the trash scattered everywhere they walk? Would we see tears wet the front of their clothing as they see the countryside which has been torn up, or as they go to get a cool drink from a spring and find pollution lying so freely in the water?

From the time of the early Native Americans until now, many changes have taken place. Civilization has increased and more room is needed for homes to be built. Society has taken away much respect for nature. It is natural to pollute the land for many Indians today because it has become a habit, and everyone else seems not to care. As civilization grew, we tended to other concerns. Land is still used for much of our survival, but it is overused.

Will there ever come a day when the Indian people will have the blinds removed from their eyes, and be able to recognize nature as a living thing? Will they ever love, respect and treat her with care? Only time holds the answer, but in the meantime, nature must continue to be overused.



PROPOSED WILDERNESS and PUBLIC LANDS NEAR FT. BELKNAP

1980

Questions, discussion topics, and assignments

Although white society as a whole has shown a disregard for the Indian, and a lack of understanding of the natural world, many non-Indians have been very supportive of both the Indian and preservation of nature. (The author of this book is a non-Indian.)

1) Who was George Catlin, and what was his part in American history?
2) The Bob Marshall Wilderness is one of the largest wild areas in the lower 48 states. Who was Robert Marshall, and what did he accomplish?
3) Choose three of these American conservationists, and find out about them. Write about them in an essay or term paper.

John Muir
Henry David Thoreau
William O. Douglas
Aldo Leopold
John Wesley Powell
Edward Abbey
Robert Redford
David Brower
Stewart Udall
Mary Hunter Austin
Gifford Pinchot
Stephen Mather
Bernard DeVoto
Joseph Wood Krutch
Theodore Roosevelt
Garrett Hardin

4) Areas that are officially designated as wilderness normally receive more attention from the public. What would be some disadvantages to having a wilderness area in the Missouri Breaks?

LIMESTONE SPIRES IN LITTLE CHIEF CANYON

PHOTO BY ROB HUBERMAN

Fort Belknap's contribution to world problems

A remarkable man, Thunder Travelling to Loftier Mountain Heights, (Chief Joseph) of the Nez Perce tribe once said, *"The earth was created by the assistance of the sun, and it should be left as it was. The country was made without lines of demarcation, and it is no man's business to divide it."* Although we live on a reservation, we are all one people on one planet, a tiny "space ship" hurtling through space around a giant "fusion reactor", the sun. The boundaries of our reservasion become meaningless when compared to the world as a whole. How we live our lives here at Fort Belknap will have an effect on the rest of the state, the country, and ultimately, the rest of the world. A child who is born in the 1970's on the Fort Belknap Reservation and lives the life style of today will require about 20,000 gallons of gasoline, 25 million gallons of water, 50 tons of food, 10 tons of fertilizer, 50 tons of iron and steel, 6 tons of paper, and over 1000 barrels of petroleum. In a lifetime, this person will discard 10 thousand glass bottles, 20 thousand cans, three automobiles, 10 tons of

particulate air pollution (more if we use coal for a major energy source), and over 100 tons of garbage.*

The world is faced with great problems: Human populations are growing much faster than ever before in mankind's time on the planet. There are more people than the earth's natural systems can deal with. We are now adding 1.4 million people to the planet each week. As we eat our dinners, we must realize that about 1,400 human beings have just died of starvation or disease because they lack food. And while we continue to eat a variety of foods, as man has always done, most of the world's people eat plant foods, and little else. In the food chain it takes 1000 pounds of grass or plant food to add 100 pounds to a cow. It takes 100 pounds of beef to add 10 pounds to a human. But 1000 pounds of plant food eaten directly by a human would add 100 pounds to the human. Today's populations require this efficiency in food production, since there is less and less land to grow it on. In just 35 years, the earth's population will be *twice* what it is today, making life a little worse for each of us, and bringing man closer to the verge of possible extinction.

We have developed civilization and technology that uses up our earth's resources faster and faster each year. We have only so much land, fossil energy fuels, minerals, clean water, etc. When we use up these, we will have no more.

The possibility of global destruction by thermonuclear weapons is greater now than ever before. The United States or the Soviet Union could, with the push of some buttons, destroy the world as we know it.

We pour waste products through our natural systems faster than nature can accept them. This results in dead, decaying lakes and streams, wastelands, and sickening air. As the great Chief Seattle put it over 100 years ago, *"This earth is precious to Him, and to harm the earth is to heap contempt on its Creator. The whites too shall pass, perhaps sooner than all other tribes. Continue to contaminate your bed, and you will one night suffocate in your own waste."*

The philosophies and words of the great Indian leaders were mainly ignored when they were recorded over the past several centuries. But today, society is beginning to recognize the truth and wisdom in the Indians' understanding of nature, and man's place on the earth. While it was our ancestors who understood and lived by nature's laws, our tribal leaders of today are copying white society's every move, and ignoring the lessons of history. We scheme to tear up our land. We are building our communities around outmoded plans. The technologies and attitudes which have been bringing America to a dead end are being repeated on our reservation. Take our new HUD homes as an example. These are laid out side by side, with no regard for beauty or privacy, which our Indian people are used to. They have been designed and constructed without much concern for their energy efficiency, or type of energy system used. They are poorly insulated, and located without regard for solar heat. Instead they utilize the costly and non-renewable electric furnace and water heater. The electricity we use comes from either the burning of air polluting fossil fuels, or from a dam that had to bury a river valley to operate.

---

*from G. Tyler Miller, Living in the Environment, Concepts, Problems, and Alternatives

In Montana, there are plans to strip mine and burn staggering amounts of coal for the generation of this electricity. Billions of dollars will be spent to tear up hundreds of square miles of our countryside, and pour billions of tons of harmful pollutants into the atmosphere. Rivers and streams could be dammed or simply sucked dry in order to run these monsterous generators. As many environmentalists see it, this is being planned for several reasons:

1) to provide huge profits to the energy and mining industry,
2) to maintain our present methods of producing energy in this country - even though it will not last very long into the 21st century, and
3) to support a society that seek's to maintain our present level of consumption and waste, at all costs.

As Indian people, we should look back to the philosophies of our ancestors, who knew to live in harmony with the earth. In the 1970's several hundred homes have been built on our reservation that could have been designed to use solar energy for heating, and wind energy (another form of solar energy) for electricity. We live in a region that receives a great deal of both wind and sunshine. They should have been better insulated against heat loss. Instead, our people will pay higher and higher utility bills, and at the same time be supporting the bank accounts of the companies (i.e. mining interests) who have been taking advantage of Indians for years, all in the name of "progress for America".

Other aspects of our modern life also reflect the callous disregard for our earth and its resources. We drive around in gas gulping cars and trucks, often just to race or show off. We toss thousands of pounds of beer cans along our roads. Cans which pollute the countryside, and waste the important resources of aluminum and fossil fuel energy necessary to manufacture new aluminum. A

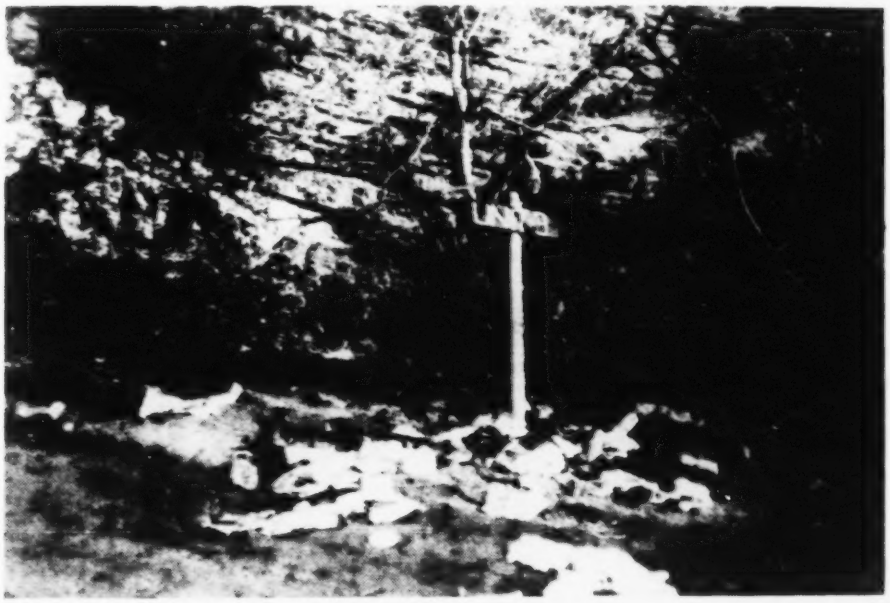


PHOTO BY ROB HUBERMAN

"The Mission Canyon is a beautiful place to enjoy yourself. But those who don't care or understand just dirty it up by throwing cans, baby diapers, and all kinds of trash. Why these people don't understand is a mystery that is yet to be solved."

-CARRIE LONGKNIFE

trip to our dumps would tell any observer that we follow the same wasteful patterns of consumption as do our fellow Americans. (On "Reservation Clean-up Day" we did not even recycle this aluminum. Instead we wasted it by hauling it to the landfill areas.) Our beautiful mountain recreation areas in Mission Canyon look like garbage dumps. Trash is strewn throughout the streets of Hays and Pine Grove.

While many people feel that we are better off today than ever before, due to our modern houses, power, and other apparent improvements, we are all paying an undetected price. The "improvements" have gradually taken our Indian people from a life of freedom and self-reliance to an ever increasing dependance on a distant government. By using some simplified examples, we can see how this has happened over the years.

Beginning 100 years ago, we find that our ancestors provided nearly everything they needed for themselves. Homes were made from skins or canvas, which was a trade good. Energy for heating and cooling came from gathered wood and the wind. Food was hunted and collected, and stored year-round. Horses served well enough for transportation. Tools, clothes, utensils, all the necessities of life, as well as the toys and artistic crafts were made by our own people. We were a self-sufficient society.

By the turn of the twentieth century, the days of hunting and roaming were all but ended. We learned to build permanent houses on allotted land, and also began raising food as farmers and ranchers. We were growing dependent upon the BIA for food, especially when hunting or gardening failed. But we still provided our own homes, out of logs and lumber from our sawmills. These sturdy buildings can still be found today. (The McMeel's cabin at the mouth of Mission Canyon, still intact after nearly 100 years, is a living testimony to the quality of construction and materials.) Transportation was still furnished by our own horses, and "powered" by our own hay. Women sewed most of their families clothes, and men worked as cowboys for the small income necessary to buy the things that could not be provided by the families themselves. As we learned more about agriculture, our gardens and truck farms became more productive. Some people raised milk cows, and others raised laying hens. Even when money was hard to come by, most of the families lived in warm, tight houses, heated by wood fires, ate fresh, locally-produced food, and travelled around well enough in wagons or on horseback. Though there were some times of hardship, people generally made do. When the Great Depression hit the United States, paralyzing those in the cities, our people lived as they had been living for the past 30 years.

Today we have all but lost our life-style of the early years of the reservation. We have found it easier to sit back and let the government hand us food in the form of commodities, rather than raise it ourselves. We take welfare checks to buy our cars and trucks and the gasoline for them, rather than working like our fathers did. We have greater mobility with our automobiles and improved roads. We have a softer, easier life with electric homes, grocery stores, commodities, and government assistance money to buy what we need. But where would we be if the United States economy became depressed? What will we do when energy becomes

scarce, or too expensive for us to afford? What if Washington D.C. "turned off the spigot", so to speak? We could start by losing our HUD houses, along with several acres of land upon which they are built. The water system would go with the house (by agreement with HUD, the land and improvements are signed over to the Housing Authority.) Our pickup trucks? We would just have to park them and look at them. We wouldn't have government "handout" money to buy gas. We would not know how to grow gardens anymore, nor would we be inclined to grow them if we did know how, since our attitudes have changed. The government subsidies which help make our utility cooperatives possible would also dry up, causing them to pass their increased costs on to us in the form of astronomical heating bills. We could be a cold, hungry and miserable lot. We would be needlessly poor, living amidst green, rolling hills, streams of clear water, and mountains of woods, game, and wild foods. Having forgotten the ways of our ancestors, we would not know how to use these resources. Even if we did, we would probably not respect the law of the land, taking only what we need. Our population could never be supported from the land's wild foods anymore-there are too many of us. We would destroy our natural surroundings if we tried.

Today we are at a crossroads. We have the resources we need to become a much more self-sufficient community. Although we do not have our own money to set up such a community, there is still government grant money available to the tribe, as well as a tribal income from agriculture, and treaty money. It is up to *us* to change the way we live, to build communities that are in tune with the future, to end our dependence on the government and giant corporations. The United States government has never really cared one way or the other about American Indians, and if times got hard in our country, we would probably be forgotten once again. Today, in America, many families have realized that our system cannot go on as it is today. They are starting to revitalize their communities - finding alternatives to complete dependence on giant corporations or giant government for their needs. There is a trend towards de-centralization and greater self-sufficiency. Many people have gone "back to the land", to live on farmsteads like their grandparents or great-grandparents did, and provide for much of their families' needs. This does not involve "turning the clocks back" 100 years. Nowadays people use the newly developed technologies such as solar powered greenhouses, wind generators, small scale sawmills, bio-gas, etc. We too must provide for more of our local needs - to provide for ourselves once again - as Indian people have done for thousands of years.

Travel Mode	Horse	Horse-Wagon	Auto	Pickups	Economy Vehicle
Housing	Tipi	Log cabin	Log cabin Frame House	HUD Homes	Local Mat'l
Home Heating	Campfire	Wood stove	Wood-Coal	Electric	Solar
Energy	Wood	Wood	Wind Wood-Coal	Elec. Co-op	Wind-Solar
Food	Hunting Gathering	Hunting Gardens	Cattle Gardens	Commodities	Gardens Commodities
Income	Not needed	Trade	Farm-Ranch work	Gov't Jobs Welfare	Local Commerce
Government Dependence	Free and Independent	About 30%	About 30%	About 80%	Less than 50%
	1870's	1900's	1930's	1970's	1980's?

But if alternative technologies are so promising, why is it so hard to get under way with solar heat systems or wind generators? The problem stems from twisted values and priorities of corporations, government, and individual citizens.

Big business is not interested in encouraging small-scale projects whereby people can achieve independance and self-sufficiency. Auto manufacturers, big oil, the mining, chemical, and nuclear industries, construction and manufacturing trade unions, wood products industry and other interests have all been successful in blocking further development of cleaner, safer, and simpler technologies. All of these interests have a stake in maintaining a status quo of consumption of *their* products. They regard these alternatives as a threat to their future profits. For example, where would the oil companies be if the auto manufacturers switched over to hydrogen-powered engines for automobiles? Hydrogen engines were invented years ago, and with the money that Detroit spends on producing the gasoline engine, we could certainly have had a feasible hydrogen engine. But hydrogen engines run from electrically-charged water, and the oil companies could not sell water! Mankind has been growing successful crops for centuries. But in thirty years, the chemical industry has gone from a few types of agricultural chemical compounds to the thousands of different varieties which farmers now pour in their fields by the ton. But if farmers did not consume all these new substances, where would the chemical manufacturers make their profits? These companies advertise heavily to convince farmers that they couldn't survive nowadays without their chemicals.

Our government is heavily influenced by these special interest lobbies, and passes laws that will not severely offend any of them. When government *does* act, it proceeds with self-glorifying schemes, like space travel and MX missle systems, while budgeting pennies for mass public transit systems or revitalization of the nation's railroads. The solar industry needs government subsidies in order to cheaply mass produce products like the *photovoltaic cell*, (which turns sunlight into electricity). Instead, the government lends most of its assistance to synthetic petroleum production and other environmentally devastating technologies.

As individuals, we are unwilling to give up our monster cars, and our seven or eight trips "around the block", thereby reducing gasoline consumption. We are lulled by big business public relations propaganda. We believe them when they tell us how tirelessly they are working to keep our country in oil and chemicals, and how much better our lives are due to their applicances and conveniences. Even when we know what's wrong we do nothing, say nothing. We let others make our decisions for us. The records have shown us that big business is motivated simply by profit, not the public good. And government is unable or unwilling to make decisive changes in our society. While the state and federal governments are busy debating about what to do, our smaller, more manageable tribal government could act now on behalf of the reservation communities, and build a future that is compatable with life on the earth. It is up to us, as citizens of Fort Belknap to work with our government for those changes.

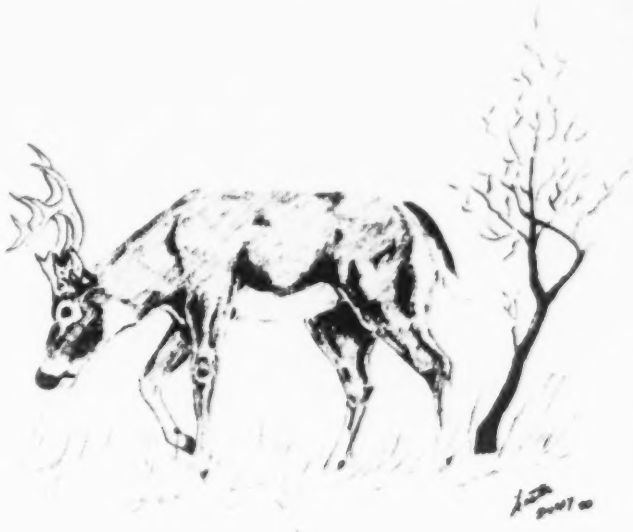
Hunting

Hunting has always been important to Indian culture. In the years before reservations and white settlement of the land, the Indian hunted over a large geo-

graphical area. It was necessary to pursue game the year round, though it was common knowledge that animals were usually healthier and fatter by early fall.

There were two main reasons why hunting was generally good. Firstly, there were fewer people. Secondly, there was a much wider area in which to hunt. Everywhere was wilderness, so wildlife was evenly dispersed over the entire country. The native hunter differed little in his impact on game populations from the cougar or wolf. Man was part of the balance of predators and prey.

Today the reverse is true. There are many more people and a greatly reduced area suitable for game animals and hunting. If tomorrow, the people of the Fort Belknap community had to depend solely upon hunting for all of our food, the game would soon be gone or driven out of the area completely. With the present system of income, through employment, commodities, and other government assistance, there is little true <u>need</u> for hunting. Even though we may not need to hunt just to live, many of us enjoy the fresh, wild meat, and also enjoy the act of hunting itself. It maintains our link with the earth, and tells us that we are still part of nature's community.



Our relationship between the hunter and the hunted should be one of deep respect, as it was to our ancestors. The hunter of long ago did not hunt what would not be eaten or used. Game animals and edible plants were considered to be a gift from the Great Spirit to man, and the Indian knew that this spirit was also present within the other living things who shared the earth. The white frontiersmen and settlers killed animals often for the sake of killing them. They almost always killed more than they needed, and cared little for the spirit within the animal. Are our hunters here today more like the early Indian, or the American frontiersmen?

Although our population continues to increase, and our wild lands on the reservation decrease, there is no actual conservation of wildlife or game. Hunting is open year round to tribal members. This can be both good and bad for our people. Having game <u>available</u> year round can mean better food for some of our members who need it. But in practice, many of us who do not actually need the game will hunt it anyway. This is bad for wildlife - it keeps population levels below what the land could support. We should all practice conservation of our game, and impose our <u>own</u> hunting seasons or limits. That way we will have greater numbers of game birds, fish, and animals. Spring time hunting is especially bad. Most species are giving birth and caring for young during the spring and early summer. To shoot these parents is to insure that there will be fewer mature animals in the fall, since their young will not survive without them.

Birds must be permitted to nest, and deer must be allowed to peacefully graze with their fawns. Animals cannot tolerate year-round pressure and will react by moving to safer areas, where game laws are observed.

Rare or endangered species should never be hunted for any reason. Eagles, for instance, are present here on Fort Belknap, but it is one of the few places in the nation where they do exist. Bald eagles should be protected at all costs. They are an endangered species, and might not survive despite man's recent efforts to save them.

If we are to continue to hunt game on Fort Belknap, we must come to realistic terms with the idea of wildlife conservation. We cannot push our game populations beyond their limits. We must insure that our wildlife has a time and a place to live and raise young without being molested. We need to limit the number of game animals we harvest in a given year. The hunter who comes upon 5 or 6 deer, and then proceeds to shoot as many of them as is possible, is reacting in the same manner as the frontiersman who wiped out the buffalo. This "great white hunter" approach to wildlife may serve to boost the ego of the hunter, but it really represents callousness and greed that would not have been condoned by our Indian forefathers.

Another reason given for overhunting or poaching is the financial reward. Pelts of rare furbearers like the bobcat or mountain lion will bring a high price. Elk antlers in velvet are bought and sold in a black market for use in pills. It is ironic that the creatures that are most threatened by extinction or severe decrease in their kind are the ones which are so often poached. Buffalo were all but wiped out in America, so that hunters could make a profit from their hides or tongues. White hunters cared nothing about the possibilities of wiping out an entire species. They felt nothing for the animal beyond its dollar value on the day's market.

Today the Indian is also willing to sell a species into extinction. If the animal is worth money, some of our people will kill it. As we come to grips with the realities of the Twentieth century, we will understand that hunting cannot be what it used to be. As Chief Seattle put it, *"If all the beasts were gone man would die of great loneliness of spirit."*

As our human populations increase and the truly wild areas of the reservation decrease, the quality of hunting will become poorer each year. We must set aside some of these wild areas, protecting them from development if we want to insure ourselves of wildlife in the future. We must manage our wildlife populations with wisdom and compassion.

Non-renewable resource development

What is the potential for oil, gas, or mineral development on Fort Belknap? For years our tribal members have been wondering why no one has uncovered the "buried treasure" that supposedly lies beneath our land. It is said that by exploiting our mineral resources we could all gain an income, thereby easing the poverty level.

During the past several years the tribal council has conducted careful surveys of both the Little Rockies, and the plains area, is search of commercially valuable mineral and oil deposits. The results of surveys indicated that these minerals or fossil fuels were not present in commercial quantities. It is now only wishful thinking on the part of some of our people who still hope to "cash in" on resourses that are simply not there. Further exploration for natural gas, and oil continue near the reservation's sub-marginal lands in the Timber Ridge area.

The benefits of oil and gas well drilling, or mining must always be weighed against the possible disadvantages in any given area. These activities always disrupt the natural environment to some degree. If such resources are discovered, there are questions which need to be answered before we hurry to develop the area.

1) Is the proposed development in a place that is considered sacred to our people? In the 1930's, a great area of rock was quarried from Snake Butte. This was a very sad time for those who considered this a holy place. Do we have the right to simply tear up an area that has religious signifigance to our people?

2) Would the development destroy important wildlife habitat? Throughout America's history the mining and energy industries have shown little regard for nature and wildlife. Money and profit are usually considered first. Do our people share these same values today? Can we place a dollar value on our wild creatures?

3) Would the proposed development have an adverse impact on our local communities, or our way of life? These types of development normally involve the influx of outsiders both as technicians and skilled laborers. Trucks and heavy equipment drive to and from the wells or mine sites. There is often noise, air and water pollution, traffic and safety hazzards, crime, or the possibility of fire, spills, or chemical poisoning, and other accidents. By careful planning and procedures, many of these problems can be minimized, but they will always be present to some extent. Proper provisions for housing, water, sanitation, roads, health care, police and other services would help us manage the problems. Technical and managerial training of our own people would be very important. If the income derived from these projects was funnelled to outside interests, our people would stand little to gain for the sacrifice of their land, or their "peace and quiet". No matter how we look at it, the more people we have in an area, the more problems we have as well. The Northern Cheyenne and the Crows have experienced their share of difficulties in adjusting their traditional Indian ways of life to accomodate modern non-Inidan society, industrial development, and environmental damages.

4) Who would pay the money for the necessary additions to local services and facilities mentioned in #3?

5) Would the proposed development represent an irretrievable commitment of resources? In other words, would the land, water, forest community, etc. be changed in such a way that it could not be used in the future for grazing, farming, hunting, etc? We should avoid any possible development that could

ruin the land for use by future generations. A given parcel of land may not be "worth" much in terms of dollars as rangeland, compared to the dollar value of mining or energy development. But the renewable resource of range or farmland must be figured over a long period of time. Our children and their children will need productive land in the future, and we do not have the right to reap a huge profit at their expense. Developers often paint a rosy picture of land reclamation, but there is not really any long-term proof that their techniques can in fact restore the land. It took nature thousands of years for each species to adapt in a living eco-system. It may be a rude assumption to believe that modern man can "tear it up and put it back together again" in a way that will endure for years to come.

6) If we are listening to advice from "experts", whose interest do they represent? Are they looking out for the welfare of the tribe, or do they represent a resource developer? We can not be naive in assuming that private research teams, or government agencies are never influenced by business interests.

Over the long run, our renewable resources can provide the most benefit to our people, and our future generations. The absence of "great wealth" in our mountains or beneath our plains may someday prove to be a blessing in disguise. To the Indian there may be more valuable gold in the autumn leaves than in limestone ore.

"Many in our new generation seem to want something for nothing all the time. They want high pay for everything today - long ago the young used to help the old for nothing. Everything comes so easy for the young today- they don't appreciate it, since they have nothing to look forward to. You appreciate life better when you work hard for what you get. Nowadays some of our people hunt in the spring. Then they want to sell the deer - their meat isn't good in the spring. The poor little young deer are left wandering around and won't make it without their parents. Those people should impose their own hunting seasons. No one should buy deer which are shot in the spring - then maybe those others would stop hunting out of season."

-JEANETTE WARRIOR

Questions, discussion topics and assignments

Suggested reading: National Wildlife Federation booklet "The Best Present of All"

On the TV show, The Dukes of Hazzard, the characters are shown barrelling across fields and open countryside, entirely off the roads. The narrator, Mr. Jennings, adds, "Folks in Hazzard County are individualistic - when there isn't a road to where they're going, they just make their own."

1) Is the Dukes of Hazzard a popular show with the nation's young audiences?
2) What sort of attitudes does this show inspire concerning a) the natural environment? b) waste of natural resources?

3) Do you admire the heroes (the Duke boys) or do you think they are really jerks? Why?
4) What affects might this show have on its viewers?
5) Who are the weekly sponsors of this show? What have they to gain by sponsoring this series?
6) Who produces the show? Why do you think they wish to portray American's in this manner?
7) Is there any connection between the *kinds* of shows TV networks will air, and the interests of their sponsors, the American big business conglomerates?

The TV show Grizzly Adams is also a Hollywood production. Adams is shown as a gentle friend of the animals, Indians, and wayward children.

1) Does the show Grizzly Adams portray a realistic relationship between man and nature?
2) Does the show seem to have a message about hunting and trapping?
3) How does this show portray the Indian?
4) Who were the Mountain Men, and why were they here in the western frontier?

Many movies and TV shows create scenes where wild animals attack human beings.

1) Does this generally happen in real life?
2) What are a wild animals' first instincts when they sense man's presence?

Listen to a friend or relative tell a hunting story.

1) Is the story told from the animal's point of view, or from the hunter's point of view?

The storyteller will often give details of how the animal was brought down.

2) Is there humor in the story? Does the humor involve the killing of the animal? Does the hunter show respect, indifference, or contempt for the animal?
3) If the incident *is* shown as being funny, do you, the listener feel that it is funny, too? Why or why not?
4) Was the hunting done from a vehicle, or on foot? What type of weapons were used?
5) What are the true reasons for telling hunting stories?
6) Has the Indian's attitude towards hunting changed in the past 100 years?
7) What are the reasons given for hunting (non-food) animals like the bobcat, coyote, or eagle? Do you agree or disagree with these reasons?
8) Is there a *pattern* to hunting stories?

In 1886 Father Eberschweiler, an early missionary in Hays, gave a written description of Fort Belknap:

> "I only can compare that most beautiful country with the promised land where Milk and honey flows, ... The cattle country with grazing land: the best I ever saw. Timber: that whole mountain range is thickly covered from the bottom to the top of the mountain. Water: seven beautiful creeks, running into the Milk River, clear as crystal, sweet as honey. Cultivating land: at all the Creeks, but especially at "Peoples Creek"; at least 15 miles long remaining near the mountains is a deep, wide valley of the best garden land, enough to make the whole tribe here very rich and happy."*

Although his words sound romantic, there is actually a great deal of truth in his statement. In fact, the people of Fort Belknap are lucky to have such beautiful and diverse land. In the early years of the United States government, it was often their policy to force the native peoples on small reservations of land, much of which was considered useless to white settlers. This was often the pattern in the East and Midwest: either allow for a small poor reservation near the white settlements, or "remove" Indians to land in the western frontier areas, such as Oklahoma. But by the time Montana was settled, there was simply no other place to send the tribes. Reservation boundaries were determined on the basis of traditional hunting grounds of the plains tribes, or permanent homes of the intermountain tribes such as the Flatheads. There was no deliberate attempt to find poor or undesireable lands for the Montana tribes. Most agreed on areas that had been inhabited by the various tribes during the late 19th century. Broad boundaries were described for the Blackfeet, Gros Ventre, Assiniboine, Sioux, and Crow peoples, based primarily on where they happened to be at that time in history. These boundaries were soon reduced to the relatively small reservations we know today. The people of Fort Belknap ended up with land which was in fact equal to or better than much of the immediately surrounding country, in terms of natural resources. A trip through an American city, sprawling suburbs, factories, etc., or to a strip mined wasteland in the once beautiful countryside would convince most people that this reservation is a beautiful, unspoiled community of plains, farms, mountains, streams, people, and wildlife. In many ways, it is land that is only recently entering the twentieth century.

For our Indian people, Fort Belknap is our final homeland. There is no place for us to go if we lose what we have here. It is our duty to protect this land.

---

* from Wm. Barry, Fort Belknap: The First One Hundred Years, p. 55

PHOTO BY MARK KODAY

"Our land is more valuable than your money. It will last forever. It will not even perish by the flames of fire. As long as the sun shines and the waters flow, this land will be here to give life to men and animals. We cannot sell the lives of men nor animals; therefore we cannot sell this land. It was put here for us by the Great Spirit and we cannot sell it because it does not belong to us. You can count your money and burn it within the nod of a buffalo's head, but only the Great Spirit can count the grains of sand and the blades of grass of these plains. As a present to you, we will give you anything we have that you can take with you; but the land, never."

-A BLACKFEET CHIEF*

"Today our land around here is being tortured. The people mine it, farm it, and take many minerals from the soil. The people today don't realize what the land is doing for them. They are always digging it up and never replacing it. If not for the many things the land gives us we would be nothing. Some people today still cherish the land, but others are polluting and abusing it."

TERESA BROCKIE

*from T.C. McLuhan, Touch the Earth, p. 53

aboriginal title - claim put forward by Canadian native peoples which in essence states that, since their people have always inhabited and made a livelihood from a given land area, that they have definite legal rights to that area, therefore their tribal decisions concerning land use should pre-empt federal or provincial management of that land.

biome - major ecosystems characterized by the dominant plant type (i.e. *grassland* biome). Biomes are also defined by unique physical or climatic features, such as *desert* biome or *arctic tundra* biome. Communities represent smaller divisions within a biome. In our area, the river bottoms, breaks, and plains are all different *communities* within the grasslands *biome*.

confluence - a flowing together of two or more streams

coniferous - cone-bearing trees, mostly evergreen (i.e. lodgepole pine)

deciduous - trees which lose their leaves at the end of the growing season (i.e. maple, aspen)

draw - natural "v" shaped drainage area on a mountainside

ecology and environment - The words *ecology* and *environment* are often confused. *Ecology* refers to the study of the relationship between an organism and its surroundings, or, a study of the structure and function of nature. Ecology is a science; a study, and is used in the same context as "history" or "biology". *Environment* means the physical surroundings of an organism, or community. The place itself, and the conditions that influence that organism, or community. Therefore, it is incorrect to speak of "protecting the ecology". An *environmentalist* is a person who actively supports efforts to protect the earth's *environment*, whereas an *ecologist* is actually a scientist who's field of expertise is the study of *ecology*.

fisheries - waters which are managed or protected for the production of food or sport fish; a water hatchery for fish

impermeable - (as in rock) rock that will not let water pass through. Porous rock, or rock-gravel-soil mixtures allow water to diffuse through the layers. Rock such as shale is *impermeable*.

mature forest - forest characterized by old-aged trees, usually in the climax stage

meander - following a winding and turning course

Mountain Men - this term refers specifically to the American and Canadian trappers or traders who roamed through the Rocky Mountain territory from about 1810 - 1845.

park - mountain area characterized by open meadows and scattered trees,(found within evergreen forests.)

sedimentary - rock of the type that is 1) deposited in layers by settling mud and aquatic debris, or 2) an accumulation of rocks, minerals, and organic materials

siltation - the collection of fine particles of clay or other fine-grained rock forms suspended in water. While silting occurs naturally in streams such as the Missouri River, it can be harmful to aquatic communities in the mountain streams which normally run clear.

slump - depression or flat area in a mountainside, especially where impermeable subsurface rock layers, such as shale collect water and hold it near the surface. Aspen trees prefer these moist soils.

sub-marginal lands - name used by BIA and Tribal government in reference to the recently acquired land adjacent to the south-western boundary of the reservation, (near Timber Ridge). Total area: approximately 35 sections, or 23,000 acres

summer fallow - the practice of leaving a field plowed and cultivated, but not planted for the summer growing season.

watershed - land area from which water drains into common streams. Continuous mountain ridges form the boundaries of watersheds. In the Little Rockies, the southern crest of the range runs roughly east and west, draining water to the north or south of the ridge.

APPENDIX

Organizations and government agencies

The following offices could aid research on environment-related study projects, as well as provide up-to-date information.

Bureau of Land Management - Lewistown District Office

This office manages the Little Rockies and Missouri River public lands. There are 3.9 million acres of public lands within this large management district. The office can provide speakers for a high school or community audience, maps, pamphlets, and other information.

Address: Bureau of Land Management
Lewistown District Office
Airport Road
Lewistown, Montana 59457

Bureau of Land Management - Havre office

Request management quad maps from here.

Address: Bureau of Land Management
Federal Building
Drawer 911
Havre, Montana 59501

Friends of the Earth

An active lobbying group for important environmental issues. Monthly newspaper published.

Address: Friends of the Earth
529 Commercial Street
San Francisco, California 94111

Harlem Public Library

Subscribes to potentially useful magazines. Greater selection of books than at Hays/Lodgepole School libraries. Books may be checked out by Blaine County residents.

Montana Environmental Information Center

Helena-based environmental lobby group. Provides current information on state environmental issues. Publishes "Down to Earth" periodical.

Address: Montana Environmental Information Center
P. O. Box 1184
Helena, Montana 59601

National Center for Appropriate Technology

Runs grant programs to community development corporations, Indian tribes, and other public agencies, co-ops, etc. (for low-income communities). Funds things like solar greenhouses, recycling, agriculture. A good possibility for our communities.

Address: National Center for Appropriate Technology
Grants Program
Box 3838
Butte, Montana 59701

National Wildlife Federation

Conservation organization with lots of free or low-cost school materials.

Address: National Wildlife Federation
1412 16th Street, NW
Washington, D.C. 20036

U.S. Fish and Wildlife Service, Kalispell office

The staff of the fish management-division works with fish in Fort Belknap waters. The staff is receptive and cooperative.

Address: U.S. Fish and Wildlife Service
Box 567
Kalispell, Montana 59901

For other national organizations see Appendix A-3, A-4; Living in the Environment; Miller

The following offices are located at Fort Belknap Agency.

BIA Resources - Forestry Department

Information on forestry and Little Rockies. Detailed maps and stereoscopic aerial photographs of Little Rockies. Materials cannot leave the office.

BIA Resources - Land Department

Information on land use, water use, municipal projects, wildlife. Some maps may be available.

Fort Belknap Tribal Education Department

New programs for cultural resources and historical literature from primary sources on the reservation. Several booklets are available on a limited basis. Research by students or teachers must be done in the Education office - materials cannot be removed, since many are not yet duplicated or published.

Fort Belknap Tribal Planning Department

Information on land use decisions; some historical references.

Local area maps

Bureau of Land Management

Surface Management Quad Maps - 1:126,720 scale. Shows land ownership in color codes, roads, stream drainages, buildings, cemetaries, points of interest, etc. (planimetric) Fort Belknap Reservation is on quads # NE10, NE11, NE18, NE19. These maps are attractive and useful, and are free to the public at the Havre BLM office, Federal Building.

Public Lands Maps - Color coded - larger area covered than on surface management maps. Can be obtained at any BLM office. See maps # 6, 7, 16, and 17. Reverse side on all maps has state-wide breakdown of land ownership, including private, BLM, national forest, Indian reservations, and U.S. Fish and Wildlife management areas.

United States Geological Survey

USGS Topographic Maps - 7.5 minute series, scale 1:24000. These are the most detailed maps available for our area. They show topography, forested areas, roads, trails, springs, buildings, stream drainages, cemetaries, etc. Cost: $1.25 each. For the Little Rockies area of Fort Belknap Reservation, order John Coulee, Crazyman Coulee, Hays, Zortmen, Bear Mountain, Coburn Butte, Lake Seventeen West, Lake Seventeen East, Stiffarm Coulee, Lodge Pole, Ball Coulee, Ester Lake. A reference map for these quad maps is available from the USGS.

Western United States - 1:250000 scale. Lewistown quadrangle. Good map of our part of North Central Montana, including the Missouri River country and Little Rockies.

Fort Belknap Agency

Highway System Map - Two-piece detailed map of roads on the reservation. Sometimes available from Agency road maintainance department.

Hays/Lodgepole library book list

The following books have been added to the Hays/Lodgepole Public School Libraries. (Most of the books will have been placed in the high school library.)

The Hunters; Whitfield

Horse Packing in Pictures; Davis

Orienteering for Sport and Pleasure; Bengtsson

The Hiker's Guide to Montana; Schneider

The Coyote; Leydet

Poisonous Range Plants in Montana; MSU

The Solar Home Book; Anderson

Muddling Toward Frugality; Johnson

Producing Your Own Power; Stoner

Birds of Prey; Brown

Snow; Kirk

Sagebrush Country; Valum

Pioneer Conservationists of Western America; Wild

Nature's Economy; Worster

Vanishing Species; Time/Life

The Book of Trees for Positive Identification; Grimm

Edible Native Plants of the Rocky Mountains; Harrington

Paradise Below Zero; Rutstrum

Food-From-the Woods Cookbook; Angier

Wilderness and the American Mind; Nash

The New Complete Walker; Fletcher

Outdoor Survival Skills; Olsen

Living in the Environment; Miller

How to Take Good Pictures; Herder

Gracier National Park; Radlaver

The Beaver; Benson

Edible and Poisonous Plants of the Western States, flash cards

Suggested study projects by high school subject

The following is a list of class projects or assignments, broken down by subject. These were discussed and some were tried by teachers during the 1979 - 1980 academic year. The projects involve either environmental education goals, or Indian cultural studies.

Art

1) beadwork and quill work
2) wildlife drawing and painting

English

1) Chief Seattle's speech - for recital or critical reading
2) Touch the Earth (McLuhan) for reading
3) Essays on Indian view of nature vs. western society's view
4) Journalism - cover a local environmental issue for the school paper

Health and P.E.

1) develop student interest in backpacking, day hiking, non-technical mountain climbing, cross country skiing, or orienteering.

History

1) Suggested local historical authors and books:
   Coburn, Walt - rancher from southern end of the Little Rockies. wrote about this area 100 years ago.
   Comes At Night, Roaming Days - Warrior Stories
   Russell, C. M., Rawhide Rawlins, plus other written accounts by Russell
   Schultz, J.W., My Life As An Indian, plus others
2) *Excellent* teacher's reference: Wilderness and the American Mind (Nash) Could be read by advanced students

Home Economics

1) Food additives - see enrichment studies, Living in the Environment (Miller)
2) Nutrition as a world problem
3) home energy savings - how to be more energy efficient, and why it matters to the environment
4) berries - uses of choke cherry, serviceberry, gooseberry, wild raspberry, buffaloberry. Refer to Edible Native Plants of the Rocky Mountains (Harrington)
5) wild game preparation; butchering, drying and preserving
6) emergency food storage

Industrial arts

1) Importance of skills and tools to low income people. How to provide necessities using do-it-yourself methods
2) relate Industrial Arts skills to personal independence and self-sufficiency
3) use recycled materials on projects
4) undertake an alternative energy project, such as a simple methane gas digester, or chose one of student interest. See Producing Your Own Power, (Stoner)
5) Explain how students or community members could build their own homes out of natural, local materials (i.e. stone, log)
6) Suggested reading: The Making of Tools (Weygers)
   The Recycling, Use and Repair of Tools (Weygers)
   Reverence for Wood

Math

1) populations statistics - how to understand and interpret. Refer to Living in the Environment (Miller)
2) compass problems - how to use maps and a compass. Refer to Excursions in Outdoor Measurement (Johnson)
3) gasoline conservation problems: develop a model public transit system for Fort Belknap. This project would include extensive numerical computation, and would apply the student's skills to a local problem. Develop math problems pertaining to fuel efficiency, waste of fuel, etc. Use local examples - How much gasoline is used by the Hays

community in order to pick up the mail? Could a mail delivery system work more efficiently?

Music

1) man's response to noise pollution
2) music from natural materials
3) compare European music to Native American music
4) have students find popular music with nature, or conservation as a theme (i.e. John Denver)
5) compare disco music, rock music to "natural music" such as classical and romantic periods, or Indian music. How does man derive music from his environment? Example: Disco music is inspired by a mechanized society. Discuss.

Science

1) incorporate the principles of ecology into the science curriculum
2) work with an industrial arts project on alternative energy
3) emphasize conservation when discussing local wildlife
4) include a discussion of environmental factors wherever possible. Example: study of rivers of Montana - discuss pollution; de-watering for industrial development, dam construction, etc.
5) stress importance of sound hunting practices
6) stress problems of rare and endangered species, especially local examples.

BIBLIOGRAPHY

Alexander, Taylor R., and Fichter, George; 1973; Ecology; Golden Press Western Publishing Co., Inc.; Racine, Wisconsin

Angier, Bradford; 1972; Feasting Free on Wild Edibles; Stackpole Books, Harrisburg, PA

Barry, Edward; The Fort Belknap Indian Reservation - The First 100 Years 1855 - 1955; Big Sky Books; Bozeman, MT

Bayless, Stephen R.; 1969; Winter Food Habits, Range Use, and Home Range of Antelope in Montana; The Journal of Wildlife Management

Benson, Barbara; 1977; The Beaver; Polestar Books; Cambridge Press

Bigby, Delmar; May 1980; Interview; Gros Ventre and Assiniboine Tribal Government - Planning Department; Fort Belknap Agency, Montana

Brown, Dr. C.J.D.; 1971; Fishes of Montana; Big Sky Books; Bozeman, MT

Bureau of Land Management; BLM and the Environment; Bureau of Land Management

Bureau of Land Management; 1979; Missouri Breaks - Grazing Environmental Statement Draft; Bureau of Land Management

Bureau of Land Management; 1979; Montana Intensive Wilderness Inventory - Proposed Decision; Bureau of Land Management

Bureau of Land Management; 1978; Wilderness Inventory Handbook; Bureau of Land Management

Burt, Wm. and Grossenheider, Richard; 1976; A Field Guide to the Mammals; Houghton Mifflin Co; Boston

Capture, John; May, 1980; Interview; Gros Ventre and Assiniboine Tribal Government - Planning Department; Fort Belknap Agency, Montana

Collins; Dr. D.; 1976 & 1979; Man in the Environment Notes; Montana State Univ. Bozeman, Montana

Comes At Night, George; 1978; Roaming Days - Warrior Stories; Blackfeet Heritage Program; Browning, Montana

Cornell, Joseph; 1979; Sharing Nature With Children; Ananda Publishers

Dodge, Richard; 1977; Montana Population Projections 1975 - 2000; Division of Research and Information Systems; Montana Department of Community Affairs

Dusek, Gary; 1975; Range Relations of Mule Deer and Cattle In Prarie Habitat; The Journal of Wildlife Management

Eng, Jones, & Gjersing; 1979; Construction and Management of Stockponds for Waterfowl; Bureau of Land Management; Denver, Colorado

Godfrey, Chuck; February, 1980; Interview; Wilderness Review Specialist; Bureau of Land Management; Lewistown, Montana

Harrington, H.D.; 1967; Edible Native Plants of the Rocky Mountains; University of New Mexico Press

Huberman, Robert & Small, Andrew; 1979; Fort Belknap Community Council - Official Reply to DEIS - Zortman & Landusky Mining Companies Operations

Konizeski, Dick; 1970; The Montanans' Fishing Guide - East of the Continental Divide; Mountain Press Publishing Co.; Missoula, Montana

Lehr, Burnett, & Zim; 1975; Weather; Golden Press; Western Publishing Co., Inc.: Racine, Wisconsin

Leydet, Francois; 1977; The Coyote; University of Oklahoma Press

Mander, Jerry; 1978; Four Arguements for the Elimination of Television; Morrow Quill; New York

McLuhan, T.C.; 1971; Touch the Earth; Promontory Press; New York

Miller, G. Tyler; 1975; Living in the Environment - Concepts, Problems, and Alternatives; Wadsworth Publishing Co., Inc.; Belmont, California

Montana Department of State Lands; 1978; Draft EIS - Proposed Plan of Mining and Reclamation Zortman Mining Co. & Landusky Mining Co.; Montana Department of State Lands; Helena, Montana

Mundinger, John G; 1976; Waterfowl Response to Rest-Rotation Grazing; Journal of Wildlife Management

Mussehl, Thomas; 1960; Blue Grouse Production, Movements, and Populations in the Bridger Mountains; Journal of Wildlife Management

Nash, Roderick; 1967; Wilderness and the American Mind; Yale University Press; London

National Science Foundation; 1978; Theory and Practice of Mountain Pine Beetle Management in Lodgepole Pine Forests; University of Idaho Press; Moscow

National Wildlife Federation; 1979; Endangered and Threatened Animal Species and Subspecies; National Wildlife Federation; Washington, D.C.

Northern Cheyenne; 1977; Request for Class I Air Quality Designation; Northern Cheyenne Tribe

Odum, Eugene; 1971; Fundamentals of Ecology; W. B. Saunders Co. Philadelphia

Petersen, Larry & Randall, Lois; March, 1980; Interview; U.S. Fish & Wildlife Service; Kalispell, Montana

Randall, Lois; 1977; Fishery Management 1977 Annual Report for Fort Belknap Indian Reservation; U.S. Fish & Wildlife Service; Kalispell, Montana

Roe, Stewart; April, 1980; Interview; BIA Resources Department, Fort Belknap Agency, Montana

Stiffarm, Preston; May 1980; Interview; Gros Ventre and Assiniboine Tribal Education Department; Fort Belknap Agency; Montana

Stoner, Carol; 1974; Producing Your Own Power - How to Make Nature's Energy Sources Work for You; Vintage/Random House; New York

Sprunt IV, Alexander & Zim; 1961; Gamebirds - A Guide to Native American Species and Their Habits; Golden Press; Racine, Wisconsin

Toole, K. Ross; 1976; The Rape of the Great Plains; Atlantic Monthly Press; Little, Brown & Co; Boston

U.S. Department of Energy; Aug/Sept 1979; "The Energy Consumer"; Vol. 1, No. 4

Wallestad, Richard & Pyrah, Duane; 1974; Movement and Nesting of Sage Grouse Hens in Central Montana; Journal of Wildlife Management

Weschler, Lawrence; May, 1980; An Interview with Barry Commoner; "Rolling Stone Magazine"

Western Regional Environmental Education Council and The American Forest Institute; 1977; Project Learning Tree: K - 6; American Forest Institute; Washington, D.C.

Western Regional Environmental Education Council and The American Forest Institute; 1977; Project Learning Tree: 7 - 12; American Forest Institute; Washington, D.C.

Wild, Peter; 1979; Pioneer Conservationists of Western America; Mountain Press Publishing Co.; Missoula, Montana

Wilkerson, Ron; April, 1980; Interview; BIA Forestry Department; Fort Belknap Agency, Montana

Worster, Donald; 1977; Nature's Economy; Sierra Club Books; San Francisco, CA

Yaeger, Leininger, & Ryerson; 1976; A Guide to Common Montana Range Plants; Range Management Club; Montana State University; Bozeman, Montana

Zim, Herbert; 1964; The Rocky Mountains; Golden Press; Racine, Wisconsin